NA
9127
B4
C35
1952
copy 2
IGSL

University of California
Graduate Student Project
January, 1952

# Interim GENERAL PLAN for Berkeley, California

City planning Berkeley
Vocations Architecture Calif.
University. School of architecture

BUREAU OF PUBLIC ADMINISTRATION
LIBRARY
SEP 30 1952
UNIVERSITY OF CALIFORNIA

PART 1 Studies and Proposals

NA9127
B4C35
1952
copy 2
IGSL
UCB

OAKLAND
BERKELEY
EMERYVILLE
GABRIEL MOULIN STUDIOS

# INTERIM GENERAL PLAN FOR BERKELEY, CALIFORNIA

## Part I: Studies and Proposals

Graduate Student Project, Department of City and Regional Planning and the School of Architecture, University of California, Berkeley, January, 1952

Digitized by the Internet Archive
in 2026 with funding from
State of California and California State Library

https://archive.org/details/C101743475

# FOREWORD

The proposed Interim General Plan for Berkeley, which is presented in this report, together with a related exhibit of 30 large panels illustrating possibilities for future desirable development for six areas or features of the plan, 12 of which are reproduced here, are the result of a collaborative graduate student project conducted by two classes of city planning and architecture students on the Berkeley campus of the University of California in the 1951 Fall semester. The report and the Interim General Plan are primarily the work of the city planning students; the specific developmental studies were made by the architecture students in their assumed role as consultants to the planners. Each group, however, made major contributions to the work of the other; and the report and exhibit represent, in our judgment, a gratifyingly successful experiment in professional cooperation and collaboration for which the students deserve great credit.

The exact nature of the study which the students have carried out is described in the opening chapters of the report and in the initial assignment statements, which are reproduced as Appendix A. It was our intention to provide an opportunity for graduate students in the two related fields to discover by direct, first-hand experience what each profession has to offer to the other in their common general objective of assisting our society to provide a better urban environment for the conduct of individual, family, and community life.

It is our belief that members of the architectural and city planning professions, as well as city planning commissioners and citizens interested in improving the architectural quality of our cities, will find that the report contains some important new ideas concerning the nature of effective city planning practice and concerning the relationships that can and must be developed between the two professions, if we are to make better progress than we have to date in the creation of beautiful as well as functional urban communities.

We wish to add our word of thanks to the acknowledgments made elsewhere to the many individuals whose help has made possible the successful completion of the project.

George Downs
Associate Professor of Architecture

T. J. Kent, Jr.
Professor of City Planning

January 1952

# PREFACE

This is a student report. It represents the efforts of eighteen graduate students at the University of California during the course of one academic semester. As an academic exercise, this report has no official status in connection with the program of the Berkeley Department of City Planning.

The study which the report describes was initiated in an effort to accomplish three groups of objectives. The first was concerned with the primary activity of the University departments which participated in the study--that of training students for professional careers. The second objective was the exploration of ideas through research. The third was to test the feasibility of interdepartmental collaboration within the structure of the University.

Specifically, the objectives were these:

1. Academic Objectives.

    a. To enable the student to develop a comprehensive understanding of the method of defining and approaching the solution of problems in city planning.

    b. To offer the student an opportunity to learn how to collaborate effectively as a member of a group and how to direct group work.

    c. To endeavor to require the student to arrive at reasonable conclusions to problems and to state clearly the assumptions and limitations which affect the validity of the conclusions.

    d. To enable the student to learn the proper use of the techniques for the preparation of planning surveys and of long-range, comprehensive, general plans.

    e. To demonstrate to the student the importance of satisfactory written, graphic, and oral presentation of his work.

    f. To enable the student to develop and understanding of the methods of defining, programming, and conducting specific architectural studies, as those studies relate to the illustration of general city plans.

2. Research Objectives.

    a. To explore the feasibility of the preparation of an interim general plan by a typical planning agency, as that agency is presently constituted.

    b. To explore the possibility of applying aesthetic criteria in the preparation of a general plan.

3. Collaboration Objective.
   To test the feasibility of close collaboration between the Department of City and Regional Planning and the School of Architecture in a joint teaching and research effort.

The academic objectives are those of the Department of City and Regional Planning and of the School of Architecture. They also reflect the aims of the students enrolled in their respective curricula. Eleven of the students were engaged in the third semester of the two-year program of the Department of City and Regional Planning, which leads to the professional degree, Master of City Planning. Their undergraduate training was highly diversified, their previous work having been in the fields of landscape architecture, architecture, business administration, economics, political science, and sociology. Six of the students were engaged in the one-year graduate curriculum in the School of Architecture, which grants the professional graduate degree, Bachelor of Architecture. One student, who was pursuing individual graduate study in the field of geography, had participated in the series of City Planning Theory Seminars but was not formally enrolled in the course in which the study was conducted. His participation came about by virtue of his active interest in the city planning field and at his own request.

In view of the diversified backgrounds of the individuals in the student group, an attempt was made to divide the research and administrative responsibilities, in order to allow each student to participate in all phases of the project while, at the same time, exploiting the specialized skills and interests of each. A detailed account of the procedures followed in this study appears as Appendix B; and it is therefore sufficient here to note that the students organized themselves as the staff of a typical city or county planning department, some of the specialized functions being performed by an "outside" student-architect consultant group. Professor George Downs, Associate Professor of Architecture, and Professor T. J. Kent, Jr., Professor of City Planning, offered the guidance and instruction necessary for the conduct of the project.

In initiating this study the instructors were proposing to further the two basic aims of an academic institution. They were attempting to teach the subject matter of their respective fields to their students and they were attempting to do so by having the students engage in research. Both the teaching and the research aims were to be furthered through the conduct of a single effort, the academic course having as its secondary objective the exploration of two ideas through the pragmatic investigation of the validity of those ideas.

The first of the hypotheses, concerned with the possibility of preparing a meaningful interim general plan, is discussed in Chapter 2. The ideas underlying such a plan were new ones to the students who participated in the study. However, as this report is being reproduced, the Preliminary General Plan for Boston has come to their attention. Published in December, 1950, the Boston plan manifests all of the basic characteristics defining this study, with one exception: It was prepared in the course of an intensive fifteen-month effort; it is intended to be only a preliminary version of the official general plan which will be developed

in the course of continued research; it is to serve as an interim guide for the citizens and the government of Boston until such time as the more carefully studied plan is completed. Insofar as it was prepared with the assistance of a capable firm of planning consultants, it does not illustrate the proposition set forth in Chapter 2 that an interim plan is capable of preparation by the regular staff of an established agency. The quality of the Boston plan may strongly recommend the retention of a qualified planning consultant, however.

The second hypothesis which was to have been tested in the course of this study was concerned with the possibility of applying aesthetic criteria in the preparation of a general plan. In the prospectus which set forth the study, Professor Kent expressed this idea in the following terms:

> Professor Downs and I believe that the most effective working relationships can be achieved if it is assumed that the Planning Commission, on the recommendation of its Director, has engaged an outstanding firm of architects to advise and assist the Director and staff in the preparation of the preliminary master plan. Although this may seem to be an unusual assumption, I believe that such a role must be developed for the architect, landscape architect, and engineer before these professions will be able to make the vitally necessary contributions which only they can make to the future improvement of the city as expressed in the official master plan (general plan). The exact nature of the work to be undertaken by the architects must be defined as a result of equal collaboration. It must be clearly understood by both groups, however, that this collaborative problem does not provide an introduction to architecture for the city planners, nor an introduction to city planning for the architects. Just what the role of the architect will be is not easy to see; American society will certainly eventually demand that its urban environment be organized in a far more adequate manner--both functionally and aesthetically--in order to provide decently for the full needs of human beings. Art experience, in the long run, is an absolutely vital human activity; no society known to anthropologists has continued to exist without providing a very important role for the creative artist and without recognizing the daily need for art experience.*

In an effort to explore these ideas, a team composed of one city planning student and five architecture students undertook an intensive and highly illuminating survey and analysis of the visual-functional characteristics of Berkeley. Their findings have shaped the formulation of the interim plan in large measure; and although a detailed, illustrated account of this phase of the study was planned for incorporation in this report as a part of Chapter 6, unavoidable difficulties have unfortunately precluded its inclusion.

One other major omission must be noted. Although an attempt has been made to state the physical planning objectives and assumptions which underlie the composition of the interim plan which is

---

*The entire text of Professor Kent's statement is reproduced as Appendix A.

described here, no attempt has been made to reach a consensus nor to formulate the social objectives of the various members of the group which are in fact expressed in the proposed plan. Since the students agree upon the importance of a frank statement of their many biases, the absence of such a statement here is to be regretted.

Several factors have contributed to the imposition of important, basic limitations upon the student study. Firstly, there was a limitation in the amount of time which individual students could devote to the effort. All students, during the period of study, had responsibilities other than those of the project, both to studies in other courses in the University and to other activities. As a consequence, attempts to assume the role of a full-time, professional staff were hampered. For example, there were obstacles to overcome in the scheduling of meetings of the entire student group and the faculty coordinators so that all could be present; such would not be the case in an established planning office. However, insofar as the student staff was composed of eighteen persons, and insofar as the average local planning office has many fewer persons on its staff, the part-time basis of the work on this study has contributed to bringing the simulated situation closer to the reality which was to be approximated.

Secondly, the students had not previously experienced the administrative problems associated with the coordination of so large a group. A considerable amount of time was consumed in the joint effort to overcome group inertia and to learn the necessities and procedures of specialization of labor as the means of achieving a coordinated endeavor.

Thirdly, the nature of the collaborative project, involving two separate University departments, was a new experience to the students. Much time was of necessity consumed in the sincere efforts of each student group to understand the goals and methods of operation of the other.

The most important limitation was, of course, the fact that the persons who are primarily responsible for the study are students and not experienced planners or architects.

Whatever the degree of success achieved by this study, it is in the largest sense the result of the interest and cooperation which was extended to the students by the many persons who contributed so generously of their time and understanding. These persons are listed in Appendix E under the heading "Interviewees". The student group wishes to take this opportunity to extend its sincere thanks to every one of the persons whose name is listed. A number of those persons must be singled out here, however, for their contribution has been so large that the project could not have been properly conducted without their assistance. To each the student group expresses its most sincere gratitude. They are: Professors Downs and Kent, who patiently nursed the study through all its phases and withstood the many trials which were associated with it; Corwin R. Mocine, through whose interest and cooperation a keen understanding of Berkeley as well as a wealth of basic planning information pertaining to Berkeley were made available to the students; Professors Donald S. Berry, Francis Violich, and Sydney Williams, and Messrs. Robert Danielson, Richard Dunann, William Finley, James Keilty, Lawrence Livingston, and Charles

Woodward, all of whom willingly consulted with the students and criticized the work in its various stages. Mrs. Helen White, Secretary of the Department of City and Regional Planning, arranged for the defrayal of a substantial amount of the financial costs. Dean William Wurster also provided for the payment of a portion of the monetary costs from the budget of the School of Architecture.

It is impossible adequately to thank Miss Marianne Skemp and Mr. Norman Robson for their kindness to the students. Their patience and thoughtfulness far exceeded their original responsibilities as typist and as printer of the color plates; the excellence of their work was matched only by the students' pleasurable relations with both of them during the period of the report's reproduction. The students wish to express their appreciation to the Remington Rand Corporation Representatives for their assistance in attaining the reproductive quality of this report.

January 1952

The Student Group

Kenneth R. Anderson
Max Anderson
Leonard Blackford*
Robert W. Cook
Roger Courtney
Robert Groh
Kenneth Green
James H. Hawks
David Miller
Louis B. Muhly
Labelle Prussin*
William Rhone*
Donald Stafford*
Edward Sue*
Frank Ventura
Albert Richard Wagner
Donn Weaver*
Melvin M. Webber

(* Architecture Students)

# TABLE OF CONTENTS

## PART I: STUDIES AND PROPOSALS

Foreword by Professors Downs and Kent ..... v
Preface ..... vi
List of Plates ..... xiv
List of Tables ..... xvi
List of Charts ..... xviii

Section I: The Theoretical Framework

Chapter
1. The Nature of the General Plan ..... 3
2. The Nature of the Interim General Plan ..... 13

Section II: Berkeley: Past-Present-Future

3. Background: Berkeley in the Bay Region, 1850-1950 ..... 23
   - Northern California ..... 23
   - The Bay-Delta Area ..... 27
   - The Bay Region ..... 32
   - Bay Region Circulation ..... 36
   - Bay Region Land Use ..... 38
   - The East Bay and Berkeley ..... 42
   - Berkeley's Origins ..... 46
   - Berkeley's Recent Development ..... 48
   - Physical Influences within Berkeley ..... 51
   - Differentiation within Berkeley ..... 54

4. Assumptions Underlying the Interim General Plan for Berkeley ..... 59
   - Assumptions Concerning the Bay Area ..... 59
   - Assumptions Concerning Berkeley ..... 62

5. A Summary of the Interim General Plan for Berkeley ..... 65
   - City-wide Objectives of the Interim General Plan ..... 66
   - City-wide Principles of the Plan ..... 68
   - The Proposals of the Plan ..... 68
     - The University of California ..... 68
     - Residential Areas ..... 69
     - Circulation Media ..... 70
     - Commercial Areas ..... 71
     - Industrial Areas ..... 72
     - Public Service Facilities ..... 72
     - Aesthetic Qualities ..... 74

TABLE OF CONTENTS - CONTINUED

Chapter
6. The Components of the City and the Elements of the Plan..... 75
A. Introduction..... 75
B. Population Forecasting and the General Plan..... 81
Introduction..... 81
Characteristics of Population Forecasts..... 81
Population Control as a Function of Public Policy..... 82
The Planned Holding Capacity..... 84
Effect of Holding Capacity on Population Forecasts..... 85
C. Residential Areas..... 87
Present Patterns of Residential Development in Berkeley..... 87
Density..... 92
Density Pattern in Berkeley, 1950..... 93
Family Size, Age Composition, and Residential Development..... 97
Recent Developments..... 99
Land Available for New Construction..... 101
Residential Portions of the Interim General Plan..... 103
Objectives..... 103
Principles..... 104
Standards..... 105
Proposals of the Interim General Plan..... 107
Summary of the Proposals..... 111
D. Industrial Areas..... 114
Introduction..... 114
The Regional Context..... 117
Industry in Berkeley..... 118
A Projection of Berkeley's Industrial Land Requirements..... 119
Principles for Industrial Land Planning..... 128
Proposals of the Interim General Plan..... 128
E. Commercial Areas..... 131
The Regional Context..... 131
Commercial Activity in Berkeley..... 132
A Projection of Berkeley's Commercial Land Requirements..... 136
Principles Applicable to the Planning of Commercial Areas..... 139
Proposals of the Interim General Plan..... 141

TABLE OF CONTENTS, CONTINUED

Chapter
6. The Components of the City and the Elements of the Plan (Cont'd)
F. Recreation Areas ..... 143
The Regional Context ..... 143
Recreation in Berkeley ..... 144
Principles for Planning of Recreation Areas ..... 146
Standards ..... 147
Proposals of the Interim General Plan ..... 147
G. Schools ..... 150
The University of California ..... 150
Local Public Schools in Berkeley ..... 151
Principles for School Planning ..... 152
Standards for Public School Planning ..... 152
Proposals of the Interim General Plan ..... 152
H. Motorways ..... 154
The Regional Context ..... 154
Berkeley's Existing Motorways ..... 155
The Auto-Transit Dilemma ..... 161
Parking ..... 161
Berkeley's Major Circulation Problems ..... 162
Proposals of the Interim General Plan ..... 162
I. Transit ..... 169
Introduction ..... 169
Berkeley's Present Transit System ..... 170
Berkeley's Public Transit Requirements ..... 172
Principles for Transit Planning ..... 173
Proposals of the Interim General Plan ..... 173
7. Architectural Studies of Developmental Possibilities Accompanying the Interim General Plan ..... 175

APPENDICES
Index to Appendices ..... 194
A. The Initial Assignments to the Student Group ..... 197
B. Operational Procedures of the Student Group ..... 200
C. Statement of Relationship between the Student City Planning Commission and the Student Architectural Consultant Firm ..... 205
D. Tables ..... 209
E. Sources ..... 234

## LIST OF PLATES


| Plate Number | | Page |
|---|---|---|
| 1. | Physical Geography | 52 |
| 2. | Bay Area 1950, Generalized Land Use and Circulation Patterns | 60 |
| 3. | Bay Area 1970, Assumed Land Use and Circulation Patterns | 61 |
| 4. | Generalized Land Use, 1951 | 78 |
| 5. | Residential Zoning, 1951 | 88 |
| 6. | Predominance of Residential Types, 1951, by Enumeration Districts | 90 |
| 7. | Net Residential Densities, 1930, by Census Tracts | 94 |
| 8. | Net Residential Densities, 1940, by Census Tracts | 95 |
| 9. | Net Residential Densities, 1950, by Enumeration Districts | 96 |
| 10. | Proposed Net Residential Densities | 109 |
| 11. | General Locations of Economic Activities, 1951 | 124 |
| 12. | Proposed Commercial Centers and Industrial Areas | 129 |
| 13. | Public Schools and Recreation Areas, 1951 | 145 |
| 14. | Proposed Public Schools and Recreation Areas | 148 |

LIST OF PLATES, CONTINUED


| Plate Number | | Page |
|---|---|---|
| 15. | 24-Hour Vehicular Traffic Volumes, 1952 | 158 |
| 16. | Proposed Motorways and Rapid Transit | 164 |
| 17. | Housing: A Study in Zoning and Densities | 180 |
| 18. | Housing: A Study in Zoning and Densities | 181 |
| 19. | Hill Area Study | 182 |
| 20. | Hill Area Study | 183 |
| 21. | Rapid Transit - Monorail | 184 |
| 22. | Rapid Transit - Monorail | 185 |
| 23. | Bay Front Study | 186 |
| 24. | Bay Front Study | 187 |
| 25. | Civic Center | 188 |
| 26. | Civic Center | 189 |
| 27. | Central Business District | 190 |
| 28. | Central Business District | 191 |
| 29. | Key to Enumeration Districts and Census Tracts, 1950 | 211 |
| | An Interim General Plan for Berkeley, California | Inside Back Cover |

## LIST OF TABLES


| Table No. | | Page |
|---|---|---|
| 1. | Existing Populations and Planned Holding Capacities of Areas within the Proposed Density Ranges of the Interim General Plan | 108 |
| 2. | Acreage in Existing Land Uses, Existing Zones, and Proposed Land Uses, and Each as Percentages of Total City Acreage, Berkeley, 1951 | 212 |
| 3. | Acreage in Major Land Use Types, by Census Tract, Berkeley, 1951 | 213 |
| 4. | Acreage in Major Land Use Types, by Census Tract, as Per Cent of Total Acreage of Tract, Berkeley, 1951 | 214 |
| 5. | Acreage in Residential Development, by Type of Development, for Census Tracts, Berkeley, 1951 | 215 |
| 6. | Parcels in Residential Development, by Type of Development, for Census Tracts, Berkeley, 1951 | 216 |
| 7. | Acreage in Existing Densities, Allowable Densities under Berkeley Zoning Ordinance, and Proposed Densities, Berkeley, 1951 | 217 |
| 8. | Population, Residential Acreage, and Net Residential Density, by Census Tract and Enumeration District, Berkeley, 1950-51 | 218 |
| 9. | Number of Persons per Household, by Size of Household, Berkeley, 1940 | 221 |
| 10. | Age Compositions of Populations of Berkeley, Oakland, and the Nine Bay Area Counties, as Percentages of Total Population of Each, 1940 | 221 |
| 11. | Population Trends and Forecasts, Selected Areas, 1860-1970 | 222 |
| 12. | Population, Economic Activity, and Land Area for Economic Areas of Northern California, 1860-1950, as Compared to 1950 Population Distribution | 223 |

LIST OF TABLES, CONTINUED


| Table No. | | Page |
|---|---|---|
| 13. | Number of Manufacturing Establishments, Value Added by Manufacture, and Number of Production Workers, by County, Bay Region, 1939-47 | 224 |
| 14. | Number of Manufacturing Establishments, Value Added by Manufacture, and Number of Production Workers, by City, Alameda County, 1939-47 | 225 |
| 15. | Number of Retail Establishments, Volume of Retail Sales, and Number of Retail Employees, by County, Bay Region, 1939-1948 | 226 |
| 16. | Number of Retail Establishments, Volume of Retail Sales, and Number of Retail Employees, by City, Alameda County, 1939-1948 | 227 |
| 17. | Number of Outlets and Volumes of Receipts, Selected Service Trades, by County, Bay Region, 1939-1948 | 228 |
| 18. | Number of Wholesale Outlets and Volume of Wholesale Sales, by County, Bay Region, 1939-1948 | 229 |
| 19. | Number of Employees, by Type of Economic Activity, Albany and Berkeley, 1951 | 230 |
| 20. | Projections of the Number of Production Workers and of Estimated Industrial Land Requirements, for the Nine Bay Area Counties, 1919-1970 | 231 |
| 21. | Enrollment in Principal Educational Institutions in Berkeley and Numbers of Students Commuting from Outside Berkeley, 1951 | 232 |
| 22. | Origins of Commuting Students at the University of California, 1947-48 | 232 |
| 23. | Acreage in Parks, Supervised Playgrounds, and School Playgrounds, Berkeley, 1951 | 233 |

## LIST OF CHARTS


| Chart No. | | Page |
|---|---|---|
| 1. | Population of Economic Areas within Northern California, 1860-1950, as Compared to 1950 Population Distribution | 26 |
| 2. | Distribution of Economic Activity, as Compared to 1950 Population Distribution, Areas of Northern California | 28 |
| 3. | Distribution of Manufacturing Activity in Portion of Northern California, 1919-1947, as Compared to 1950 Population Distribution of Northern California | 31 |
| 4. | Population of Areas within Six Bay Area Counties, 1860-1950, as Compared to 1950 Population Distribution of Northern California | 34 |
| 5. | Acreage in Major Land Uses, in Zoning Districts, and Proposed Land Use, as Percentages of Total City Acreage | 79 |
| 6. | Population Trends and Forecasts, Selected Areas, 1860-1970 | 86 |
| 7. | Comparison of the Age Compositions of Berkeley, Oakland, and the Nine Bay Area Counties, within Five-Year Age Intervals, 1940 | 98 |
| 8. | Summary of Existing Densities, Allowable Densities under Berkeley Zoning Ordinance, and Proposed Densities, as Percentages of Respective Residential Acreage Totals | 113 |
| 9. | Sizes of Vacant Parcels within the Proposed Industrial Area, and Sizes of Parcels Industrially Developed During the Period 1940-1950 | 127 |
| 10. | Classification of Main Thoroughfares in Berkeley According to Principal Functions, 1951 | 159 |

# PART I

## SECTION I: THE THEORETICAL FRAMEWORK

# CHAPTER 1

## THE NATURE OF THE GENERAL PLAN

City planning is no longer a novel activity of municipal government. Having achieved a youthful middle age, it has accumulated a large body of experience; it has attracted an enthusiastic group of imaginative practitioners; and it has become a continuous advisory function within American city government. But, in common with many other arts and sciences born of this century, it has failed to develop an established general theory. The absence of an accepted theory is reflected in the profession's uncertainty with respect to its role, uncertainty with respect to the procedures and the products which are its task. The citizens who employ the planners are seldom certain of their own purposes; thecity officials who work with them are seldom sure of just what it is that the planner is up to.

But this fluidity of present planning thought and practice is not to be lamented; rather, it is a quality which helps to insure the future of the profession. Certainty often becomes dogma which, in turn, discourages innovation; and a body of too rigidly accepted planning theory might well quench imaginative thinking. By its very character, planning is a species of activity which either continues to grow by innovation or dies.

The contemporary planner in the modern community finds himself in a particularly fertile field, where the opportunity for imaginative innovation is limited only by his own deficiencies. Although his role in that community suffers in some degree from a lack of clear definition, the need for someone of his skill and training is generally recognized by all members of the society. The citizen of almost every city in the United States is dissatisfied with traffic conditions. In most large cities the problems of blight are of particular concern to business firms, to citizen groups, and to city officials. Discontent with the quality and the quantity of public services is not uncommon. Property-owners and tenants alike are periodically concerned with the insidious encroachment of commerce and industry into residential areas. There are few who are wholly pleased with the appearance of the central portions of their cities. There is probably no single person living in an American city today who has not on some occasion expressed a degree of dissatisfaction with some aspect of his environment and voiced the time-worn phrase, "Why don't 'they' do something about it?"

As indeed "they" should; for the modern city is fraught with a complex of serious problems, the solutions to many of which are clearly the responsibility of city government. Within the past half century, American city government has attempted to meet that responsibility.

The early professional planning activity, which was initiated shortly after the 1893 Chicago

Fair, was largely an effort to beautify the city. The plans which were drawn for many American cities captured the imagination and enthusiasm of their citizens and encouraged the civic pride which made possible the erection of large scale public works in remarkably short periods of time. Monumental civic centers, large public parks, waterfront developments, grand avenues sprang into being. There is ample reason to believe that almost everyone was well satisfied with the results; nevertheless the splurge in civic construction soon waned. But not before city planning had become a familiar term to the man in the street; not before city planning had become synonymous with civic beautification.

On the heels of the beautification works arose an increasing interest in housing reform, sanitation enforcement, transit system development, and notably, for the control of activities which were deemed to be nuisances. Based upon the contention that factories caused a deterioration in living conditions when located in or near residential areas, that property values were endangered by the migration of non-residential land uses into neighborhood communities, most cities in the nation enacted zoning ordinances within a relatively brief period of time. Supplemented by controls over the subdivision of new lands, most cities employed the ordinances as the major device for the guidance of the city's growth.

In the 1930's public housing was projected as one solution to the problem of decay in the older portions of the cities, and large numbers of municipalities, eager to improve themselves, launched public housing programs.

But neither zoning ordinances, subdivision controls, public housing, nor civic beautification separately or jointly have fulfilled the promises that they were once believed to hold. After a generation of experience in the administration of these devices, the physical form of the city is still a source of great concern to its inhabitants, although certainly the problems which provoke that concern have been very greatly ameliorated by those devices.

In large degree, too, that amelioration has been the result of a different species of activity in which some city governments have been engaged. That activity is, of course, city planning.

Although most cities did appoint planning commissions in the period 1925 to 1950, most of the commissions devoted the largest portion of their energies and time to the administration of zoning ordinances and to the design of the new subdivision developments which were taking place on their fringes. The more venturesome of them attempted at the same time to design long-range plans for various aspects of the city's physical plant. Thus, in an attempt to schedule the expenditure of capital funds, plans for parks, for schools, for highways, for sewerage- and water-works and the like, were drawn. These plans represented conscientious attempts at the estimation of the needs of the citizens of the community at some time in the future and were necessarily drawn within the framework of the entire community area for that date. Thus, for example, the construction of a sewerage system in a community in 1940 was based upon designs which attempted to forecast the demand for sewerage facilities some 50 years hence, say

1990. The engineers, in all probability, attempted to predict the density of populations in the various portions of the city, the demands of industrial firms, of commercial and of other activities. In effect, the engineers were placed in the position of attempting to predict the entire pattern of land uses a generation and more ahead. They were attempting to predict the pattern of city streets and highways along which their pipes would be laid. They were attempting to predict the location and scales of the various public and private institutional facilities which would be developed during their design period. But in the absence of plans for the future development of some of these other components of the city, they were forced to make, at best, enlightened guesses with respect to their patterns of development.

The same kind of problem was faced by those who made plans for other facilities in the city--streets and highways, schools, parks, waterworks, etc. Wherever the city had previously prepared plans for schools, parks, streets, etc., it is assumed that the sanitary engineer used these as the basis for his computations. But, in turn, those who drew the plans for schools, parks, and streets before him could only have made considered guesses with respect to the future physical patterns of the sewerage system. Each attempted to visualize a city which did not yet exist, and the visualization of one may have been quite different from that of the next. Few ever drew this picture on paper and displayed it for all to see. And in one sense this was perhaps prudent; for the city, as visualized by the sanitary engineer may be in no sense the city desired by the citizens. Nor should one expect that it should be; the sanitary engineer is trained to design sewerage-works and not cities. But in the absence of a community-approved plan to guide him, however, and employed to design an exceedingly expensive city-wide public work as best he could, the engineer all too often did in fact set the basic design of the city. The community which came after him may have had little financial choice but to follow his basic design. The same is true of the basic highway design, the basic park design, the distribution of schools, rail lines, rail-transit routes, etc.

These basic designs are, in fact, in most cities to some degree an expression of community policy, however. One of the basic guides employed by the designer of functional plans is the zoning ordinance which maps the distribution and patterns of land uses in the city. But the zoning ordinance is, of course, not the kind of guide which the designers need in order adequately to perform their task. The ordinance is largely a picture of existing land uses, the legal instrument of control for the present and for the immediate future. It should make no pretenses in this matter. Enacted to control the kinds of development which take place in the various districts of the city in the short period which lies ahead, the zoning ordinance is usually the mirror reflection of past land use patterns and of day-to-day political decisions. Moreover, it is usually concerned primarily with private land uses. It seldom attempts to reduce the intensity of use in any given area; and, for example, should an undesirable pattern of commercial development have occurred prior to enactment, the ordinance would not necessarily attempt to correct the error, but would instead reinforce and expand the unfortunate pattern. In almost every case, the kind of thinking and study which went

into the formulation of the zoning ordinance was of a kind quite different from that sought by the sanitary engineer, or the builder, or the school board, or the recreation commission, or the highway commission, or the industrialist, or the merchant. The kind of document they need is, rather, a general plan for the future uses of the land.

Many cities have initiated planning programs in an attempt to create the kinds of plans which would meet the requirements of their citizens, merchants, industrialists, and their governmental departments. It is probably fair to estimate that very few of them have been wholly satisfied with the results of their efforts. Believing that meaningful plans for the separate functional elements could be developed, and faced with the immediate need to formulate formal bases for decision making, city governments have drawn "master plans" for waterfronts, transit, playgrounds, airports, street numbers, schools, sewerage, civic centers, fire stations, bridle paths, hiking trails, parks, scenic drives, parking, transportation terminals, street trees, utilities, historical sites, and many others. But because the number of variables which influence the separate functional elements are so diverse, the plans which were drawn were not capable of integration one with the other.

The most common such plan being prepared today is that for streets and highways; literally hundreds of such plans have already been produced. But in the absence of a plan for land use, which spells out the areas of varying population density, areas for commercial centers of varying scale, areas for industry of various needs, and areas for other classes of land use, the traffic volume which the planned streets will eventually be forced to carry cannot be estimated with a tolerable degree of accuracy. As the result, the streets and highways plans may be of negligible value. The same is of course true of similar separate plans for parks and the like.

In an attempt to fill this breach, a series of plans is oftentimes prepared and adopted, separate functional plans being cumulated over time, but the same problem arises in each case. A street plan which is completed prior to the preparation of a land use plan must assume a pattern of land uses to which it is to be geared. If a comprehensive plan for future land uses is made in the course of preparation, the trafficways plan may be meaningful. But this is seldom the case, and a set of necessarily tenuous assumptions regarding future land uses is made instead. The land use plan which follows must either be forced into the mold of the admittedly tentative assumptions, or, if it is developed independently, may require a quite different street system to serve it than that proposed by the already published and adopted street plan. Clearly, were it possible to develop all the plans simultaneously, the interrelations among all elements of the plan could better be adjusted one to the other.

The development of a plan for a city might be likened to the development of the design of an airplane. Both are extremely complex mechanisms, the city being by far the more intricate of the two. It would, in the case of the airplane, be sheer folly to attempt to design

pistons before designing cylinders, to design the wings before designing the fuselage. The engineers work on all parts of the plane before the final design for any one part is completed; they can thus adjust the design of the various elements, one to the other, as they proceed. The final over-all design is not completed until all the parts have been integrated into a single working entity. So too, it would seem, must the design of a city proceed.

This adaptation of mechanical engineering procedure to city planning is of course not a new idea. It was proposed by a group of men during the decade of the twenties, notably by Alfred Bettman, one of the pioneers of city planning in this nation. In 1925, under Bettman's leadership, the Cincinnati Planning Commission prepared such an integrated, comprehensive, city plan, the first of its kind in America. Since that time, a number of other large cities have also prepared general, master plans of this sort[1] --including San Francisco, Cleveland, Detroit, and Richmond, Virginia. Other cities, including Youngstown and Berkeley, have such plans in preparation at the present time. It is curious that so few comprehensive, general plans have been prepared to date in California. The reasons may perhaps be found in the enabling legislation under which city planning has operated.

[1]The term "general plan" is used in this report to identify the type of master plan which is described here. It is felt that because the term "master plan" is applied to a number of different types of city plans, a separate term is needed in order to facilitate discussion.



"A Standard City Planning Enabling Act" was published in 1928 by the United States Department of Commerce under Secretary Herbert Hoover. It was prepared by an Advisory Committee on City Planning and Zoning and furnished the basis for most of the state enabling legislation enacted in this country. With some modifications it was used as the basis of the California Conservation and Planning Act of 1929. In defining the function of the planning commission, the California Act uses the following language:[2]

> It shall be the function and duty of each planning commission to prepare and adopt a comprehensive, long-term, general plan for the physical development of the city, county, or region, and of any land outside the boundaries thereof which in the commission's judgment bear relation to the planning thereof. Such plan shall be known as the master plan and shall be so prepared that all or portions thereof may be adopted by the legislative body, . . . as a basis for the development of the city, county, or region for such reasonable period of time next ensuing after the adoption thereof as may practically be covered thereby. The master plan with the accompanying maps, diagrams, charts, descriptive matter and reports shall include such of the following subject matter or portions thereof as are appropriate to the city, county, or region, and as may be

[2]The State Conservation and Planning Act, California Statutes 1947, Chapter 807 and amendments thereto. Article 5, Sections 35-47.

made the basis for the physical development thereof.

A master plan may comprise any, all, or any combination of the plans specified in this article. Conservation Plan . . . Land Use Plan . . . Recreation Plan . . . Streets and Highway Plan . . . Transportation Plan . . . Transit Plan . . . Public Services and Facilities . . . Public Buildings . . . Community Design . . . Housing . . . Other and additional plans . . .[3]

The intention of the framers of the legislation is clear. The language was to be sufficiently general as to allow the maximum amount of freedom on the part of the separate communities to conduct their planning activities as they deemed most fit for their particular circumstances. General intentions and general recommendations are included, but the legislators judiciously enacted no rigorous procedure into law.

In accordance with the original intentions, the Act has been interpreted in different ways by different communities, each of them conscientiously attempting to carry out the purposes in accordance with their specialized needs. But, in general, the interpretations have been of three kinds.

---

[3]The California Act was codified in the 1951 session of the Legislature, and although the organization of the sections of the act was changed, no substantive changes were made in the language. See California Government Code, Chapter 334, Title 7, Chapter 1, Article 7, Paragraph 65200 ff.

One group of planning agencies has felt no need for over-all, comprehensive planning for the physical development of their jurisdictions, and the separate master plans which they have evolved are not intended to comprise a cumulative series of plans which corroborate and supplement one another. Rather have they made plans for only those components which are regarded as problems; and, as proposed solutions to specific problems, the plans are specific in their recommendations, limited almost exclusively to the problem under study, and short-range in their application.

A second group of jurisdictions is slowly working toward the time when they will have a series of plans which comprise a comprehensive master plan.

The third method is that of San Francisco and Berkeley, which have approached their programs by attempting to construct a single, comprehensive, long-term, general plan for the physical development of all elements within their respective jurisdictions. Study and design of each element is carried on during the same period in which the study and design of all other elements is underway, so that upon completion of the plan, proposals are made for all facets of the physical complex of the city. Although allocation of staff-time may require that work be done on one study at a time (that after completion of one study, it be temporarily dropped and that another aspect of the city be investigated), no plans are considered to be completed until there has been an opportunity to fit and refit the various aspects of the paln one to the other. San Francisco's general plan, which is now completed, and Berkeley's general plan, which is

presently in preparation, thus give recognition to the fact of the inter-relationship of the many component functions and areas of their cities and attempt, in a single concerted effort, to devise a scheme which will integrate all those elements into a working unified whole.

The general plan for San Francisco and those which have been prepared recently by the cities of Cincinnati, Cleveland, Detroit, Richmond, and a large number of European cities have seven major defining characteristics in common. These may be discussed briefly in turn.

(1) All portray upon a single set of drawings the commission's recommendations with respect to the approximate locations and scales of the major classes of land use and circulation media. The purposes of portraying all the plan's proposals within a single set of graphic presentation are twofold: it greatly simplifies the relationships illustrated and facilitates the study and design process; and it greatly simplifies the explanation of the plan to the public and thereby facilitates discussion between the planners and the citizens for whom the plan is prepared.

(2) The recently prepared general plans are commonly prepared against a time scale of approximately 20-30 years. It would be highly desirable if the recommendations could be of longer range than this, but the limitations of statistical forecasting techniques impose a limitation upon the accuracy of projections of populations, economic activity, obsolescence of structures, developments in technology and the like. A compromise must be made between the accuracy of projections and hence the validity of the plan, and the desirable longer-range planning. A 20-30 year plan can achieve a meaningful degree of accuracy in its projection-bases; and it can also function as the required realistic guide for a sufficiently long period of time as to serve the needs of public and private investors who build structures which will be amortized over many years.

Not all of the proposals recommended by the plan are anticipated to be realized within the 20-30 year period, however. Because of their great cost or because of their extensive character, some will not be achieved for perhaps 50 or more years. But they are included within the plan nonetheless, and this is necessarily so. A city, and especially a built-up city, changes very slowly. As obsolete structures are demolished and replaced, as new public works are completed, as private investors develop previously vacant areas, the city's form and character are gradually molded into ever-changing patterns. The plan attempts to recognize these processes and in the most realistic way possible to guide those processes toward the goals which it sets. It is no quick, dream scheme. But it is an imaginative, daring one. And it is content to make its progress slowly.

Hence, for example, a proposal to change a presently mixed industrial area into an exclusively residential area must wait until such time as the existing factory structures become antiquated and may be economically demolished. A proposal to create a city-wide parkway system, such as that recommended for San Francisco, must wait upon the slow acquisition of private lands by the city government. The San Francisco

greenbelts may not become a completed reality for some 50 years to come; they are shown in the general plan for the city, however, because they form an integral part of the entire city-wide recreation, trafficways, and residential systems, and the relationships among these latter elements cannot be expressed in the absence of the graphic representation of the parkways.

The general plan is not a scheduled program of development; it is rather a general guide for that development over as long a period of time as can reasonably be predicted. And it will achieve its objectives during as long a period as is necessary.

(3) The common attribute of the comprehensive character of the recent general plans has been suggested elsewhere, and it is sufficient here merely to note that each of the plans recognizes that all activities of the modern city are highly inter-dependent; the plans propose to deal with all of them and to integrate each of them into the future city's physical plant in such a way that the inter-relationships among these various land uses are the best possible.

(4) The representations of these many plan-elements is made in approximate, generalized fashion only. The drawing is not intended to be a precise document but rather to be the guide which indicates the working relationships between kinds of activities of fairly large scale. Thus, for example, the indication of a proposed freeway route which is drawn upon a base map of the city is not intended to indicate the specific location of that freeway. What is intended is the representation that volumes of traffic, which reflect the desires of citizens to move from one place to another and the desires of merchants to move goods from one place to another, is such as to warrant the construction of a trafficway which will support that projected volume of traffic, and that those volumes will require a road of freeway standards. It is then the task of the highway engineer, the traffic engineer, and other technical specialists to design the freeway, to determine the exact locations for not only the structural elements but for the main roadbed itself. Detailed studies conducted by the engineers may suggest that the freeway should follow a route blocks away from that suggested in the plan; and this is as it is intended. For the detailed kinds of studies which will produce the freeway were not within the province of the planning staff. The studies conducted by the planners indicate only the large-area patterns which the city should develop in the future.

(5) Most of the recent general plans developed by American cities make no attempt to plan the economic and social life of the city, but recognize as their sphere-of-concern only the physical development of the city. To be meaningfully realistic, of course, the physical plan must be based upon thoroughgoing studies of the economic and social characteristics of the present city and upon careful predictions of the future characteristics. Implicitly too, insofar as the plan succeeds in improving the physical plant of the city and of the city's parts, it will have bearing upon the economic and social well-being of the entire community.

(6) Because the city is an ever-changing complex, because the relationships among the various activities and areas which exist today may be quite different in the near future, each of the general plans under discussion is regarded by its developers as being merely the best that their current thinking can produce. It is the intention of each of the city governments involved that a permanent staff of capable planners--in government--and that a stable commission of interested citizens shall continue to conduct the same kinds of studies as those which antedated the plan. It is also their intention that in a period of perhaps five years the plan will be revised and that the new version will be adopted as the official policy statement of the city. Thus, as a result of this continuing process of study and revision, the general plan will always be kept up to date. It is unlikely that any single revision will propose many major changes in the original plan; rather, as study and experience progress, adjustments, corrections, refinements can be made. Over an extended period of time the plan may evolve into something quite different from the original version, but the process will be a slow, carefully considered one.

(7) The over-all objective of the general plan is to serve as a guide for the physical development of the city. Whether it is adopted by the legislative body in city government or not (and practice varies in the United States) its proposals are not legal mandates. The plan functions as a statement of policy by the city government and by the citizens it represents. It outlines the kind of city which is desired; it does not establish a legal program for the achievement of that kind of city. These programs are legislated upon completion of the plan and serve to effectuate the proposals which the plan makes. They include the zoning ordinance, the subdivision ordinance, the capital improvements program, urban redevelopment, and the official plan lines; and although they reflect the plan, they are wholly separate from it. By the judicious application of these legal devices, the proposals made by the plan can over the course of the years become real and tangible elements in the life of the city.

The preparation of a general plan is a major undertaking, requiring a considerable sum of money, a staff of skilled specialists, and usually some four to seven years of work.

The monetary savings are great, however; long-range planning of all capital improvements makes possible the more judicious budgeting of city funds. Proper planning of industrial, commercial, residential, and institutional areas repays itself in greater economic prosperity and in a concomitantly higher tax base. The better living conditions which result for all the citizens repay themselves in better lives, the dollar value of which is rarely, if ever, computable.

But the preparation of such a general plan requires a considerable period of time. During that period the city government and the citizens living and working in the community must make decisions; and, if it be the responsibility of the government, and in particular of the city planning commission, to furnish a guide for those decisions some four to seven yeare in the future, it is certainly the responsibility of

the government to furnish that guide at the present time. It is for this reason that this study attempts to explore the possibilities of the preparation of an interim general plan for the city, to serve until such time as the more thoroughly studied official general plan can be prepared.

# CHAPTER 2

## THE NATURE OF THE INTERIM GENERAL PLAN

The study which is described in this report was initiated largely for the purpose of testing one major hypothesis. The hypothesis is this:

> If a planning department which had been in operation for several years were to be given a period of a few months, a staff of reasonable size and proficiency, and a budget of modest scale, it would be possible for such a department to produce an interim general plan of sufficient comprehensiveness, thoroughness, and calibre as to serve the community adequately during the few years until an official general plan could be completed.

The conjectural thinking which preceded the formulation of this proposition has been underway for some time among many planners in the state. But although many quick master plans have been prepared by planning consultants, and although unofficial, preliminary study versions of official general plans have been prepared, there are very few examples of officially adopted, interim general plans manifesting all of the characteristics outlined here.

This interim general plan for Berkeley represents an attempt to produce such a plan under conditions which approximate those of the average planning agency. Of course, the real test of the feasibility of the idea must be made in the real situation of an actual planning agency in government, and this avenue of experimentation is not open to a university group. But because the idea is thought to have considerable merit, it is well that the deductive reasoning which underlies the formal hypothesis be summarized.

### The Nature of the Interim General Plan

As the official general plan has evolved in American city planning experience and come to be described in law, the proposals which it contains are indicated in generalized fashion only. Scale and location of a shopping center, for example, as illustrated in the plan drawing and in the text which describes the drawing, are approximate only. The plan is not intended to double as a blueprint of the developments which it proposes; rather it is intended to illustrate the over-all relationships which would result from the realization of the plan's proposals with respect to residential densities, with respect to various circulation routings, with respect to industry, with respect to public facilities, etc. It is in this sense of general relationships and of general scales that the plan is an expression of policy by the community with respect to its future physical development. As such, however, it is considerably more than a statement of community wishes.

Were the citizens of the community in some way to reach agreement as to their mutual goals and succeed in preparing a statement which explicitly

expressed their wishes, the derivation of a plan would be only slightly nearer to realization than it had been prior to the preparation of the statement. For, to be useful as an instrument for the achievement of those goals, the general plan must be considerably more detailed than a statement to the effect, for example, that retail shopping facilities of given standards should be provided. Some decision must eventually be made with respect to the location of those centers and with respect to the applicability of many given standards to a specific set of circumstances. The desired degree of specificity of a plan can probably not be stated categorically; what can be stated categorically, however, is that the plan should not attempt to fix the exact boundaries of the site and should not fix the pattern of development on the site. It should attempt only to estimate the relative scale, the relative city-wide locations, the relative intensity of use. To suggest anything more specific is to imply a considerably higher degree of knowledge than is warranted. To suggest anything less is to deny the plan its optimum utility. To suggest the desired degree of specificity, the plan must be based upon a large amount of factual information, an expression of desire by a large number of citizens, and a large measure of intuition. None of these resources is cheaply won.

In the normal course of operation of a city or county planning agency much of the needed factual data is accumulated. Because the properly constituted agency is in continual contact with the public, and because a conscientious staff will usually attempt to encourage citizen participation in its activities, in the normal course of the agency's operation a real sense of citizen desires can often be attained. And, as a consequence of his close contact with the developmental processes and patterns of the community in which he practices, the planner is usually able to achieve a large measure of understanding of the forces at work which shape that community. In order to complete the kind of studies and in order to achieve the kinds of understanding which the preparation of an official general plan requires, these are not enough. But they may be enough, coupled with a concerted goal-directed staff effort, to produce a preliminary version of the official plan.

It is probably true that the planner who has spent a number of years in a city has many imaginative ideas, most of which have never been recorded on paper, which are potentially of great value in guiding the physical development of the city--a new pattern of trafficways, an improved transit system, a more desirable development in a residential area, a proposal for resuscitating a decaying section of the city, etc. Often he is placed in the position of enforcing a zoning ordinance which he feels does not properly control the distribution of land uses. There are probably but few directors of planning who could not list dozens of major corrections which they would like to see made in their ordinances. And all of these ideas, when placed upon the same drawing and when supplemented by the thinking of his staff, of the commission, and of other informed citizens in the community, may add up to a major portion of a potential comprehensive general plan.

In view of the time element involved in the preparation of an official general plan, and in

view of the need for making judicious decisions during the period in which the plan is in preparation, it would seem to be highly desirable that the proposals which have been formulated in the minds of the separate persons be collected and analyzed, fitted and refitted, and that an effort be made to produce a tentative version of the plan which is in process. In all likelihood, most of the over-all patterns will be similar in the two plans. In most cities the distribution of existing land uses, of existing major trafficways, and of existing rail lines set the basic plan for the city; and the function of the general plan is to devise means of improving the built-up sections over a long period of time and of establishing a general guide for the portions which are not yet developed.

But in the interim period during which the official general plan is being prepared, the process of shifting land uses which that plan proposes to redirect may have become so thoroughly established as to be extremely difficult to correct. A fairly typical example may be considered. It may be assumed that there be general agreement that a given strip of commercially zoned land, which is not yet completely developed for commercial use, be reshaped in the plan so as to allow for the development of a modern, centralized shopping group, occupying two solid city blocks, having large off-street parking areas and having unified architecture and landscaping. The present zoning ordinance, typically some years old, and typically having been based upon past land use patterns rather than upon a land use plan, bears no necessary resemblance in its details to the land use plan which is to be proposed. Our example may fairly assume that the plan proposed to shift lands surrounding the existing shopping nucleus from residential to commercial use and maintain the existing commercially zoned, but undeveloped, strip in residential use. Appropriate design of the street and transit systems is also to be proposed in order properly to serve the new shopping center. It should be noted also that the plan would not propose a detailed description of the boundaries of the shopping center or a detailed description of the street systems, but would rather recommend only that the strip be prevented, that the unified type of center be encouraged, and that the location be at the approximate site of the existing core. The zoning ordinance which follows the plan would then, of course, define the district lines, perhaps shifting them over a period of years through a series of amendments in order to achieve the desired goal. The plan would show only the goal.

But, if in the months or years during which the official plan is in the making, the zoned commercial strip should be developed (and there would be no legal way of preventing that development) it would become extremely difficult to achieve the objective. The newer buildings being of more modern design and involving a much greater investment than those in the old nucleus may instead cause the decline of the nucleus and shift the core of shopping activity far from the general location in which it would most satisfactorily serve the citizens in the area. An interim general plan and an interim zoning ordinance reflecting that plan could have effectively prevented development, and could instead have furthered the objectives of the official general plan, even prior to its completion.

It is of course to be anticipated that the more thoroughgoing study which would be devoted to the making of the official plan would yield much better solutions to the many specific problems of the city and that its proposals would recommend much more substantial (and better substantiated) changes and improvements than the interim plan will propose; and this is to be desired. The recommendations made by the interim plan must necessarily be much more modest than those of its successor, having been based upon only preliminary study. Because the studies which precede it are less thoroughgoing, the recommendations will be less certain, less detailed. But, it should not yield completely to its modesty lest it sacrifice potential fertility.

Perhaps one of the most fertile attributes of the interim plan is its potential ability to encourage citizen thinking and interest in the planning process and in the physical development of the community. The public discussion, which would normally result from the public hearings preceding the adoption of the interim plan by the commission and by the legislative body, would unquestionably have the effect of increasing the degree of citizen participation in the planning process. Those imaginative, big schemes which the plan contains would tend to inspire the enthusiasm of the citizenry, tend thereby to increase support of the planning agency's activities. And many of the proposals, large and small, will encourage the merchant, the home owner and the tenant, the industrialist, and many others to come into the planning office and make known his wishes and his problems. Without this kind of citizen interest and the kind of communication which that interest makes possible, a planning program and the plan which it produces tend to be sterile. If planning be for the people, it must necessarily be of them. The interim plan would encourage that kind of democratic planning.

Of course, the test of a democratic plan is the way in which the community responds to it. By publishing a preview, as it were, of the official plan, the planning agency invites the public in to criticize its thinking, to make recommendations for improvement, to add to its proposals, to delete those which the public does not approve. In this process of criticism, avenues of investigation which had not been previously scheduled might assume greater importance. Recommendations with which the public may immediately take issue, may in the course of discussion on this preliminary basis come to take on more meaning and they may then come to support them. Furthermore, insofar as the plan would be published for all to read, it might also profit from the criticisms of other professional planners in other cities. And the net effect of criticism can only be positive. The interim general plan might thus serve as a proving ground out of which the official general plan can grow with stronger roots.

It is this line of thought which has suggested the initial hypothesis with respect to the feasibility of the interim general plan. But the major factor contributing to the decision to experiment in the actual preparation of such a plan is the need for a basis for decision by both private and public agencies. It is this need for an immediate basis for decision which induces most planning commissions to prepare separate plans for the many functional elements

of their cities. But, since all physical elements within the city are highly interdependent, an adequate basis must project all those elements ahead into the future; and the projection must moreover integrate all those elements into a working, unified community. Since it seems to be a universal law that the time of decision is always now, and since the preparation of the official general plan is a time-consuming task, the question which is raised is again this: "If a planning department which had been in operation for a few years were to be given a period of a few months, a staff of average proficiency, and a budget of modest scale, would it be possible to produce an interim general plan of sufficient comprehensiveness, thoroughness, and calibre to serve the community adequately until such time as an official general plan could be completed?"

Berkeley as the Case Study

As the sample case upon which the hypothesis was to be tested, it was necessary at the outset to select a fairly typical city, and for study purposes the City of Berkeley was chosen. A major factor in its selection was, of course, its convenience, being the site of the University of California. But it had other attractions which qualified it well for the kind of investigation which was proposed. A number of student projects which had been completed in the first year of the curriculum had been concerned with specialized aspects of the Berkeley scene, and as a consequence the students were relatively at home in Berkeley planning. A number of the students who were involved in the study had been employed on part-time or on temporary bases in the Berkeley City Planning Department. They were thus familiar with much of the work that had been already completed by the Berkeley department, were familiar with the filed materials, and generally had a sense of understanding of the planning program in that city. And too, the fact that all the students had lived in Berkeley for at least one year contributed to their general sense of familiarity with the city. It was felt that some degree of understanding by the planning staff of the character and of the problems of the city would be critical to the preparation of an interim plan; and since the study was to be conducted by a student group, Berkeley offered the closest approximation possible to the real situation of an established planning staff which had worked in a local office for a few years. The fact that one of the faculty directors of the research project, Professor Kent, is also a member of the Berkeley City Planning Commission and has consequently been in close contact with the planning program in Berkeley, further contributed toward this end.

There were other factors which favored the selection of Berkeley as the subject for the case study. Its Director of Planning, Corwin R. Mocine, had expressed interest in the project and had offered to make his services and his files available to the student staff. The Planning Commission, the City Manager and the heads of the city departments had also expressed interest in the study, and they too offered their cooperation in the effort.

Berkeley's planning program, like that of most cities in California, is young. The budget for a permanent staff was established in 1949, and it was at this time that a capable, experienced planner was employed for the first time to organize and direct a continuing planning program. In this sense, Berkeley is comparable to many other cities; for having been in operation with

a small staff[1] for only 2 1/2 years, it has accumulated a relatively small amount of basic information, as compared to those cities with older agencies and to those with large staffs.

In one respect, on the other hand, Berkeley is non-typical. Being physically surrounded on three sides by other jurisdictions and on the fourth by water, it has no new areas into which to expand, other than the submerged lands of the bay. In addition, its lands have been almost completely developed, there being only two small areas which presently contain any appreciable amount of vacant property. As the result of these two factors, many of the problems and issues which Berkeley has to face are different from those of cities having large areas of open lands on their outskirts. The fact, further, that Berkeley is centrally located in the midst of the East Bay metropolitan complex distinguishes it from those cities located in the interior of the state and from those outside of major metropolitan districts. Those factors must be kept in mind in evaluating the degree of success of the Berkeley study; however, it must also be kept in mind that it is the procedural aspects of this study which are of most pertinence; the substantive aspects must inevitably vary from city to city. In one real sense, all cities are unique and none are typical in all respects.

[1]The staff is composed of 6.5 persons: the Director, 1 Zoning Analyst, 1 Planning Technician, 1.5 Junior Planning Technicians, 1 Senior Stenographer-Clerk, 1 Intermediate Stenographer-Clerk.

There is one respect, however, in which Berkeley is probably very similar to most cities of comparable size in the state. Faced with a zoning ordinance which was drawn in the absence of a land use plan, it finds its land use patterns to be developing in a manner which is different from that which is desired; and because the city is highly "over-zoned," it finds itself unable to deal with the problem in an effective manner.

Among its provisions, the zoning ordinance allows for the construction of six-story apartment houses over almost all those portions of the city which are on relatively flat lands. The R-3 and R-4 residential districts both allow such development, and they jointly comprise 54 per cent of all lands presently zoned for residential use. (See Plate 5.) A study conducted by the planning commission in 1951 indicated that the holding capacity of the city, as expressed by the zoning ordinance, is some 889,500 persons. The 1950 population was 113,805.

The point of departure of this study is this problem of controlling the pattern of residential development. In the initial prospectus which was prepared by Professor Kent and given to the student staff in September 1951, the task was stated in the following terms:

> It will be assumed for the purposes of this student study that a problem of city-wide importance--the need for the reduction of the R-3 zone--has reached the point where a recommendation from the Planning Commission will be required in the near future. It will also be assumed that the Commission, together with several other important

> groups in the community, is no longer willing, as it had been in the past when it had no staff, to make recommendations on a matter of such importance for the future of Berkeley without also presenting to the people of the community its ideas as to the nature of the future city it has in mind. Thus a preliminary master plan (interim general plan) must be prepared in form suitable for consideration by groups and individual citizens. It must also be in form suitable for later adoption by the City Planning Commission.[2]

An official general plan is presently being prepared by the Berkeley City Planning Commission and its staff, but it will be some time before the studies and designs which must precede the plan can be completed. In the interim period, before the plan is completed, the city government and the citizens of the city must continue to make many day-to-day and many long-range decisions. They must have some immediate basis for those decisions.

It is, thus, in an attempt to investigate the possibility of the formulation of an interim general plan, fitted to the specific complex of circumstances which exist in the City of Berkeley, that the study which is described in the pages that follow was conducted.

Because it is the control of residential land uses which is the most critical problem facing the city and the planning commission, this study has focussed its attention upon that issue. It submits the residential portions of the plan as its most tenable proposals. Other factors have been treated less thoroughly, and hence they are more tentative in nature. It is assumed that the studies and designs which will follow in the continued work toward an official general plan will more thoroughly investigate those functional elements of the city which have been given less intensive treatment here. It is also anticipated, of course, that the residential areas will be submitted to a great deal of further study as well; however, it is believed that the proposals for residential areas will not require drastic revisions.

---

[2]The full text of Professor Kent's prospectus is reproduced in Appendix A to this report.

# SECTION II

## BERKELEY: PAST-PRESENT-FUTURE

# CHAPTER 3

## BACKGROUND: BERKELEY IN THE BAY REGION, 1850-1950

In its relatively brief history, Berkeley rapidly went through the phases of development of an urban center and has for some time been a rather stable, mature city. The reasons for its meteoric rise from a grazing area, through the stages of a rural college town, a suburban commuting town, a central city in a great metropolis, can scarcely be understood in the absence of an understanding of the area which that metropolis serves. The discussion which follows attempts, therefore, to summarize some of the salient characteristics of Northern California and its subareas during the past 100 years. By a series of successive focussings upon smaller and smaller areas, it is intended that a series of pictures be drawn of the broad region in which Berkeley is imbedded and then, in a final portrayal, to picture Berkeley in its physical, geographic, economic, and social setting.

### Northern California

First, let us look briefly at that part of California served and dominated by the metropolitan capital. Physically, Northern California consists of a long, broad, gently sloping mountain range facing the ocean; its steep crest on the far side cuts California off from the rest of the continent. At the foot of this range is a wide structural valley filled with alluvial soil and extending some 400 miles from south to north. Separating this valley from the sea are low parallel ranges of folded mountains with their interspersed longitudinal valleys.

On the far side of the Sierra is a wide stretch of desert basins and ranges extending to the Rocky Mountains and containing only a few oases. The near part of this desert, in Nevada, is particularly barren of oases but has produced bursts of mineral wealth that have served to enrich the Bay metropolis. For practical purposes attention may be confined to California west of the Sierra.

California climate is well known for its dry, hot summers and mild, rainy winters. The summers result from the presence of the Pacific subtropical high atmospheric pressure, with a dominance of dry stable air and optimum conditions for solar heating (except on the coast where the draft into the hot interior brings cool, foggy air off the ocean). The mildness of the winter is due in part to sunny periods associated with anticyclonic conditions aloft, and in part to the isolation of this part of the continent by the Rockies and the Sierra from the pools of frigid air that form over Northern Canada and move southward into the United States east of the Rockies. The Sierra intercept the precipitation of winter in solid form and store it for summer release, enabling Californians to make full use of the ideal growing weather then.

Economically, Northern California is in the subtropical crops area. The basic characteristics are high-value, intensive cultivation, irrigation, and concentration on specialty products

other than the staples wheat, corn, hogs, or cattle. Dependent for these staples upon the eastern United States, California pays in fruits, nuts, and vegetables, shipped east fresh, dried, frozen, or canned in immense quantities.

Here the history of agricultural production is largely a matter of ease of communication. In aboriginal times, food was produced entirely locally. Shellfish, acorns and seeds were generally available, so that local self-sufficiency led each group to stay and develop in its own area, to the point where scores of languages grew up in the Sierra foothills, the Central Valley, and the Coast Ranges.

Spanish and Mexican colonies in the valleys of the Coast Ranges largely depended on cattle, exporting hides in return for the few necessary imports. Irrigated horticulture began then, but only to the extent needed for local subsistence.

The early American economy was also dependent, but much more so, upon maritime transport: gold from the foothills and later wheat from the valley went by water all over the world to provide the balance of trade. When overland transportation by rail refrigerator-car was well established, California was able to concentrate on the growing markets of eastern cities by supplying the items of a newly diversified diet; the present concentration on horticulture began. Coast Range valleys, especially the irrigated sections, supplied much of this export at first, but by 1900 an increasing share was coming from the Delta and adjacent sections in the middle of the Central Valley; later the dry south half of the Valley, especially the side next to the water-yielding Sierra, came into heavy production, and since the war the deep-well farms across the Valley have tied California even more intimately into the national market.

To summarize, Northern California may be regarded as comprising three belts along the Pacific: (a) the sheltering Sierra, provider of power, timber, summer water and recreation; (b) the central valley with its great number of local specializations in intensive crops of almost every fruit and vegetable, much of the production coming from industrial farms which again are specialized for certain markets half a continent away; and (c) the coast ranges with their longitudinal valleys supporting intensive horticulture in places but also including patches of cattle range and in the north the heavy redwood forests.

Productive activity of Northern California as the hinterland of the Bay metropolis can be stated in terms of the number of people it has supported by its resources. In pre-white times, California's population has been estimated to have been about 300,000 or 20 per cent of that of the entire United States, a high proportion reached in spite of scarcity of technical tools, which testifies to the natural gifts of the region.

In 1860 the white population in Northern California, as a result of the gold rush, had reached 355,000 or 1.1 per cent of that of the whole United States. This first rapid rise leveled off toward the end of the century; in 1900 the population was 1,100,000, or 1.6 per cent of that of the United States. Then a second rise came with increasing horticulture; this leveled off in the thirties, leaving the region with 3 1/4 million people or 2.5 per cent of the United States population in 1940. The third rise has been a part of the westward movement associated with the Pacific wars, and now the region has

almost 5 million, or 3.2 per cent of the United States population.[1]

Northern California was the first large Anglo-American colony west of the Mississippi, and its establishment in the 1850's made possible an enveloping and penetrating attack on the American West. Founded to some extent as satellites Northern California were colonies in the Willamette Valley and along Puget Sound, which by the end of the century had reached autonomy. Southern California, which in the first wave of settlement occupied a romote position (cow counties), began in the second rise of population to develop as a separate colony of the East, with rail rather than ocean connections, an even more intensive cultivation, a denser pattern of settlement and a different type of settler, and a still higher degree of urbanization in its metropolis. The third increase of population affected these four parts of the West Coast independently but approximately equally.

The different parts of Northern California were affected differently by the three waves of growth. The first filled the Sierra foothills and boomed the river towns and ocean port giving access to the mines; its backwash populated the valleys near these routes to supply the needs of the port and mines, and the Coast Range valleys opening onto San Francisco Bay were particularly favored.

The second wave of growth was felt in the areas opened to large-scale horticulture, especially the lower San Joaquin Valley and the Delta, by new methods of irrigation and flood control. The third wave was general over all Northern California except the mountains and was slightly stronger than average in the Coast Range counties tributary to San Francisco Bay.

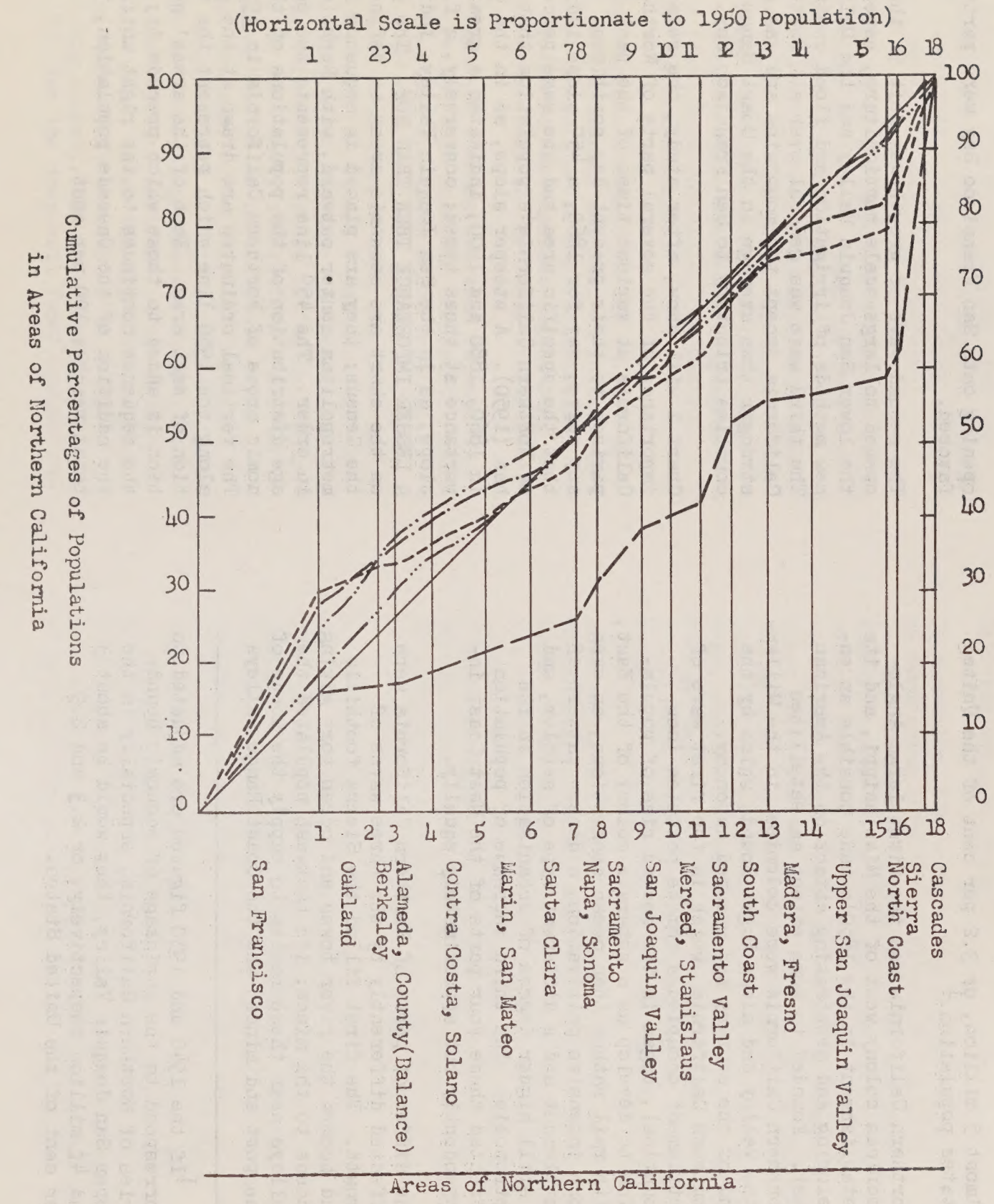
Chart 1 will show, after study, the relative importance of the several parts of Northern California at various times of the past in comparison to their present-day positions. Along any curve, say for 1860, a 45° slope indicates that the specific area had the same percentage of Northern California's population that it now has (1950). A steeper slope, as in the Sierra in 1860, 1880 and 1900, indicates a greater importance at those times; conversely, a flatter slope, as in the San Joaquin Valley, indicates A LESSER IMPORTANCE THEN THAN NOW. The columns on the chart are economic areas as defined by the Census; they are placed in sequence from the metropolitan center outward, with Berkeley third in order. The 45° line represents the percentage distribution of the populations of the economic areas of Northern California in 1950. The vertical ordinates are drawn at the points along the 1950 line which represent the population of each area. Each of the areas' population is added to those which precede it; thus the sequence continues to the right until, with the addition of the Cascade population, the total reaches 100 per cent.

---

[1] If the 1940 and 1950 figures are adjusted to correspond to the shrinkage of economic boundaries of Northern California, especially in the upper San Joaquin Valley, they would be about 3 and 4¼ million respectively, or 2.3 and 2.9 per cent of the United States.

Chart 1

POPULATION OF ECONOMIC AREAS WITHIN NORTHERN CALIFORNIA, 1860-1950, AS COMPARED TO 1950 POPULATION DISTRIBUTION




LEGEND:

1860: —— —— 1920: —— ·· ——

1880: – – – – – 1940: —— ··· ——

1900: —— · ——. 1950: (45° Line)

SOURCE: Bureau of the Census

A striking feature seen in the chart is the extent to which, after 1880, the several areas have retained their same relative importances, as shown by the predominance of slopes near 45°. The only major exceptions are the remote mountains ringing Northern California, early leaders but soon dropping to insignificance, and the San Joaquin Valley, neglected until 1910 but now of first rank in the vast empire. The other economic areas--the Coast south of San Francisco, the Sacramento Valley, the Delta, the North Bay--have grown at the same rate as the whole.

The Bay-Delta Area

Now, to look at chart 1 from another viewpoint, it is seen that the vertical ordinate of any curve, say 1900, gives the percentage of Northern California's people within a certain orbit of the metropolis, since the areas were assembled in order of their distance from the Golden Gate. For example, consider line 10: In 1860, 41 per cent of the entire region's population lived in the eleven counties that border San Francisco Bay and the confluence of the Sacramento-San Joaquin Rivers, although they contain but 9 per cent of the total area. But further, it can be seen that after 1880 no less than 60 per cent of Northern California's population lived in these central counties:

| | |
|---|---|
| 1880 | 60 per cent |
| 1900 | 63 per cent |
| 1920 | 66 per cent |
| 1940 | 63 per cent |
| 1950 | 64 per cent |

There was relatively little change in the 70 years following 1880 other than a slight peaking around 1920. This is shown on the chart by the bunching of curves where they cross ordinate 10.

As the focus is shifted from the whole Northern California region, this central core makes a desirable next step. It produces 30 per cent of the agricultural income, 77 per cent of the value added by manufacture, and, as an index of its cultural dominance has 83 per cent of the wholesale trade of Northern California. Thus a semicircle within 90 miles radius of the Golden Gate and covering only 10,000 square miles, much of which is desolate hill chaparral or barren ocean shore, has, by virtue of its tracts of good lowland, good internal circulation, and central services for outlying areas, maintained a steady dominance during periods when the state was undergoing revolutionary changes from a low-density dry-farming frontier with 800,000 people to a complex horticultural area of five million. No other section of Northern California challenges this hegemony: North Coast (2 per cent of the population), Sacramento Valley (4 per cent), South Coast (5 per cent), the Sierra (5 per cent) are mere appendages; only the San Joaquin Valley (20 per cent of the population) is of comparable magnitude.[2]

A word may be said about the threads that bind the outlying areas to this Bay-Delta core. The topographic grain of Northern California is north-

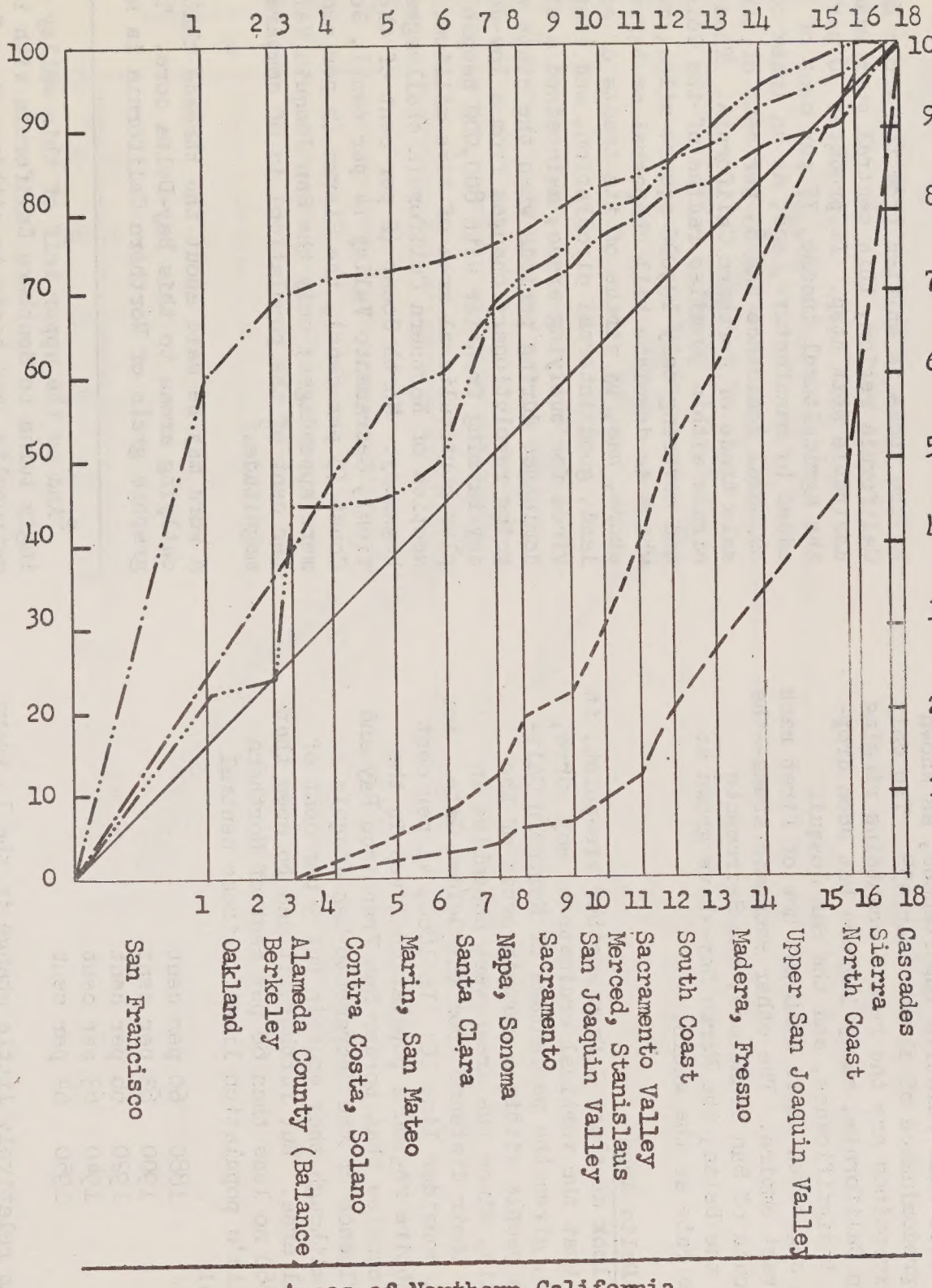
---

[2]And as the upper half of this valley increasingly turns to Southern California with its closer metropolis, and tends to withdraw from Northern California, this potential threat to the hegomony decreases.

Chart 2

# DISTRIBUTION OF ECONOMIC ACTIVITY AS COMPARED TO 1950 POPULATION, AREAS OF NORTHERN CALIFORNIA

(Horizontal Scale is Proportionate to 1950 Population)




LEGEND:

——— Population, 1950
— — Land Area
– – – – Agricultural Sales, 1945
—·—· Value Added by Mfg., 1947
—··—·· Wholesale Sales, 1948
—···—··· College Enrollment, 1950

SOURCE: Bureau of the Census

south, encouraging longitudinal routes paralleling the coast and the Sierra. This grain is cut at one point only--where the Coast Ranges behind San Francisco Bay are bowed down and in one place actually cut below sea level by the outpouring waters from the Sierra. The three bayshore counties of Alameda, Contra Costa and Solano extend over these hills into the valley and meet the Delta counties. Thus the Bay-Delta core, reaching from the ocean to the foothills of the Sierra, cuts all the north-south routes of the state. It is also accessible to the few routes East, and most of the mines were reached by short direct roads from Sacramento or Stockton.

| | |
|---|---|
| Routes north: | US 101 and Northwestern Pacific through longitudinal valleys of coast ranges. |
| | US 99 and Southern Pacific on both sides of the Central Valley. |
| Routes south: | US 101 and Southern Pacific through Coast Range valleys. |
| | US 99, Southern Pacific and Santa Fe through the San Joaquin Valley, to the East and to Los Angeles. |
| Routes east: | US 40, US 50, Southern Pacific, Western Pacific. |

Before going on to a more detailed discussion of this core area, in which lies the metropolis and Berkeley with it, a short look may be taken at some of the important means of production. Of special concern is the manner in which agriculture, manufacturing, and wholesale trade (as an index to service functions) are distributed over Northern California, and Chart 2 shows percentage values of these factors on the same grid that in Chart 1 was used to show population changes. Values are cumulated in zones outward from San Francisco, and are plotted against the present-day populations which they support. Here again it is seen that the 11-county core area, ordinate 10, at 64 per cent on the population scale, is 30 per cent on the agricultural, etc. The essentially complementary nature of agriculture and manufacturing in this state is well shown in Chart 2, areas weak in one being strong in another, proportionally to population.[3]

To consider only agriculture and manufacturing does omit other important elements of the economy, such as mining, recreation, government, military work, and other items which concentrate population in someplaces morethan in others. However, it can be seen that the curves presented in Chart 2 do cover important facts of population distribution, such as:

---

[3]In fact, one can use these three economic activities alone to make a fair approximation to population in any zone. For example, if one multiplies (manufacturing) x (66 per cent), (agriculture) x (32 per cent), and (wholesaling) x (2 per cent), he will arrive at the following estimates of population:

| | |
|---|---|
| 6-county area . . . . . | 44 per cent |
| 9-county area . . . . . | 54 per cent |
| 11-county area . . . . . | 64 per cent |
| Same plus Central Valley north of Madera . . . . | 73 per cent |
| Plus South Coast . . . . . | 77 per cent |
| Plus San Joaquin . . . . . | 92 per cent |

Estimated population percentages are all within 1 per cent of actual percentages.

(a) Per-capita curve of agriculture: increasing intensity through zones 4 to 8, uniformly distributed through zones 9 to 15 (at a rate of 2 per cent agricultural sales to 1 per cent population, or, in absolute terms $19,000,000 sales per 50,000 people). The curve then tapers off in the mountain zones.

(b) Per-capita curve of manufacturing: activity found in all zones though at a constantly decreasing rate; lumber mills and food packing plants make up the activity in outer zones while metal working is more apt to be centralized in location.

(c) Per-capita curve of wholesale trade: concentrated in the metropolis, low intensity in balance of core but again increasing slightly further out.

As a matter of interest, Chart 2 also shows a curve of land area, thinking of land as the basis of production. The slope of this curve is the ratio of square miles per man, or the inverse of population density. Note the increase in ratio as one goes away from the center until at the outer rim 5 per cent of the population occupies 44 per cent of the land (100 square miles for a hamlet of 500 people). The vertical distance between the land and the agriculture curve, too, indicates the low value of much of California's land.

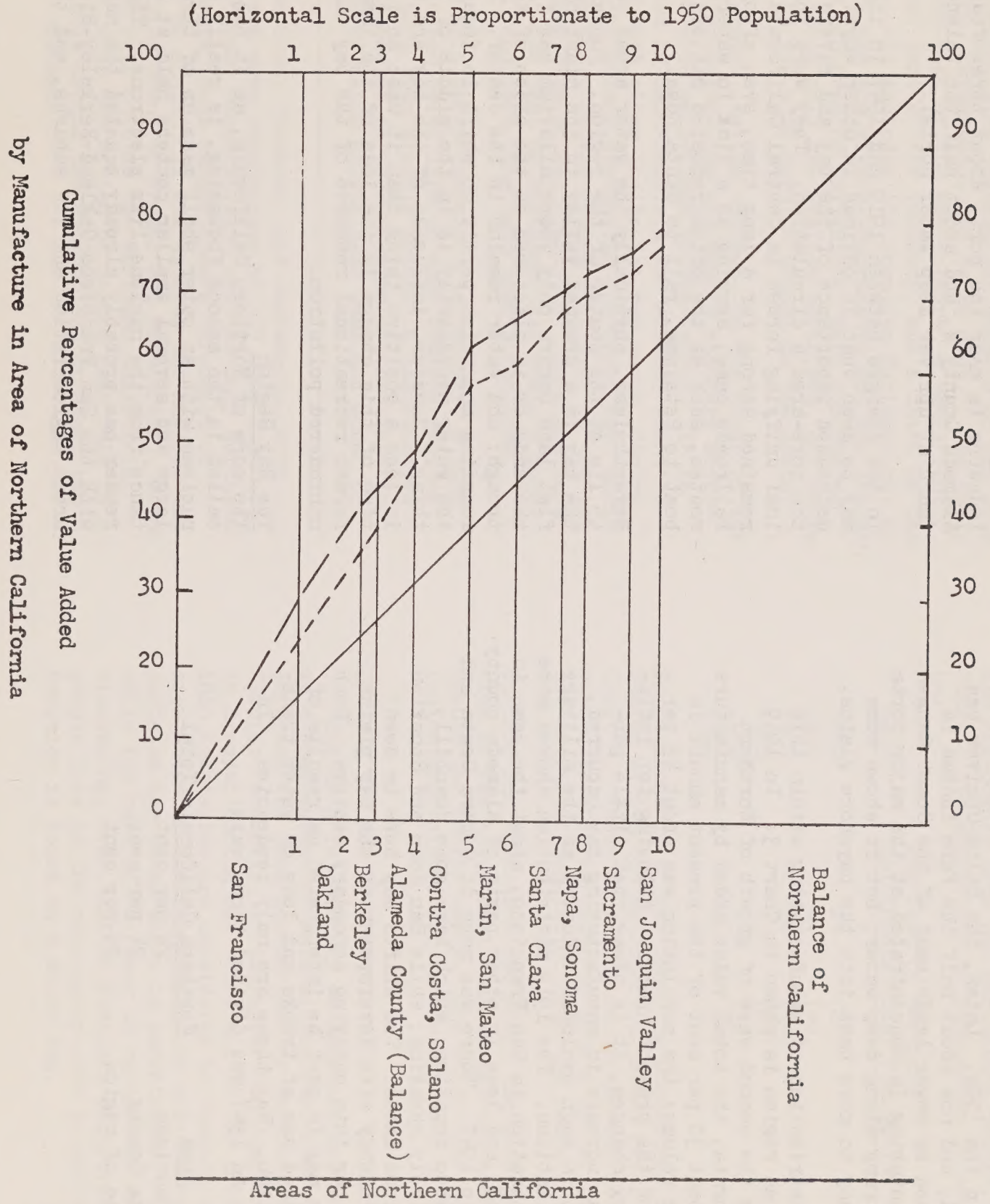
College enrollment is plotted in Chart 2 because of Berkeley's special function in this field. There is a general distribution in response to population, but a slight concentration in the core is evident (80 per cent of enrollment, 64 per cent of population). In comparison to conditions before the rise of local junior colleges and state colleges, education has taken on more of a residentiary nature. In 1920 the situation was different: the Bay Area had a near monopoly and rendered a significant service to Northern California just as it now does in wholesaling. Berkeley had about 60 per cent of the total enrollment (as against 20 per cent now); 70 per cent was in the Six-County area and 95 per cent in the Nine-County area around the Bay.

To return to the core area, the eleven counties with 60 per cent of Northern California's people, it may be noted that an appreciable quantity of agriculture is mingled with the bulk of the area's trade and manufacturing, and then pass on to examine its make-up. Fundamentally it is a region, not inland, and not coastal, but riparian in character, i.e., it is located on the shores of the rivers and the bay. All eleven counties either lie along the great rivers that join to leave the Central Valley, or else along the shores of the shallow bay through which the rivers flow before entering the ocean. This area turns its back on the sea, in a long reach of barren steep mountains which plunge into deep water with no trace of a coastal plain. Instead, population is gathered along the plains bordering the bay and its rivers and extending up the tributary valleys. Access to these plains was often gained in the old days through the marsh foreland, at literally dozens of creek embarcaderos (still to be found in old place names).

Population is gathered in nodes along the creeks that cross the plains, avoiding the mountains that separate the bay from the ocean and the longitudinal valleys from each other. Agricultural production is found on the wider plains, dating back

Chart 3

DISTRIBUTION OF MANUFACTURING ACTIVITY IN PORTION OF NORTHERN CALIFORNIA, 1919 and 1947, AS COMPARED TO 1950 DISTRIBUTION OF POPULATION OF NORTHERN CALIFORNIA




LEGEND:

——— Population, 1950

— — Value Added by Manufacture, 1919

- - - Value Added by Manufacture, 1947

SOURCE: Bureau of the Census

to the mission times and the first Anglo settlement in the '50s. Later, the Delta-Upriver was leveed, and now about half the farm income is produced by newer lands east of the Coast Ranges. Manufacturing is concentrated at the major ports and strung along deep water, but it shows some tendency to move back into the bayshore plains.

The distribution of manufacturing within this riparian region is shown in Chart 3. In 1919 during the second wave of growth of Northern California, the total value added by manufacture was about 30 per cent of the present amount in dollar volume; the population was about 43 per cent of the present number. Allowing for inflationary changes, it is clear that little per-capita increase in manufacturing has occurred, except in such excluded industry as the military installations. The 1919 distribution showed more concentration in San Francisco, about the same in Oakland, and less in other parts of Alameda county than in 1947. There was more in Contra Costa and San Mateo counties, which have gone downhill, relatively speaking, while San Jose and Stockton have come ahead. Two shifts may here be seen: one transbay with development of the bay plains, the other into outlying secondary centers. Both shifts may in part be interpreted as results of increased use of trucks and less of water transportation. But these are only tendencies. Industry in 1947 was divided three ways:

| Area | Northern California Total |
|---|---|
| San Francisco | 24 per cent |
| Alameda County | 24 per cent |
| Balance of region | 29 per cent |

It might be estimated that most San Francisco industry is near the port, about three-fourths of Alameda County's, and about half the balance (much at upriver deep water ports).

In the changes between 1919 and 1947 in industry may be seen what is obvious in other ways: the decreased importance of the bay and rivers in the core-area's circulation. They were the original unifying forces in Central California and remained strong for a long time, even after the railroads came, serving as a link in water-rail routes, such as the often repeated pattern--river boat to Petaluma, rail to Santa Rosa.

Nevertheless, physically the water areas continue to lie at the center of the region. Fundamentally the bay is a drowned valley in the midst of hills; flat land occurs only where alluvium has filled in the ends or is plastered on the sides of the trough; and water remains in the center. The surrounding mountains permit no shift in focus, so the water necessarily is in the middle of everything. However, influence of the bay and rivers is less a positive thing than it was; an illustration of this change is the loss of the immense former recreational resource of the bay through unhindered pollution.

The Bay Region

The core of Northern California, as it has been called in the second focussing, is really a nucleus with an outer shell made up of three large and several smaller centers held at a distance from the nucleus like electrons. The reader has probably already equated the nucleus with the San Francisco-Oakland-Berkeley-Richmond urban agglomeration and its suburbs, and the shell

with the outlying independent centers of San Jose, Stockton, Sacramento, and Santa Rosa.[4] The shell contains most of the agriculture, a small (but growing) part of the industry, and a third of the people. It includes the counties furthest out on the bay and the rivers--Sacramento and San Joaquin at the old head of navigation, Napa and Sonoma which touch only the shallow north bay, and Santa Clara in its wide fertile trough to the south.

What remains, as the nucleus, is the focus of the next discussion--the six-county standard metropolitan area as defined by the Census. It is composed of San Francisco and Alameda counties facing each other inside the bay mouth, Contra Costa and Solano straddling the upper bay, Marin and San Mateo on the rugged west side of the bay on either side of San Francisco. Here are more than 45 per cent of Northern California's population, and here they have been since 1880.

During this three-fourths of a century, a long time in the brief life of most western regions, there have been sizable shifts in the relative importances of different parts of the hinterland. Periods of rapid growth have come and gone, but the six-county area has maintained itself. From Chart 1 its proportion of population is seen to be:

| Date | Per Cent of Northern California Total Population | |
|---|---|---|
| 1860 | 24 | (22) |
| 1880 | 44 | (40) |
| 1900 | 46 | (46) |
| 1920 | 49 | (49) |
| 1940[5] | 45 | (50) |
| 1950 | 45 | (51) |

For a close-up of the changing population distribution within the metropolitan area, refer to Chart 4. These distribution curves may be discussed briefly in order to gain a better idea of the shifts of population over the years.

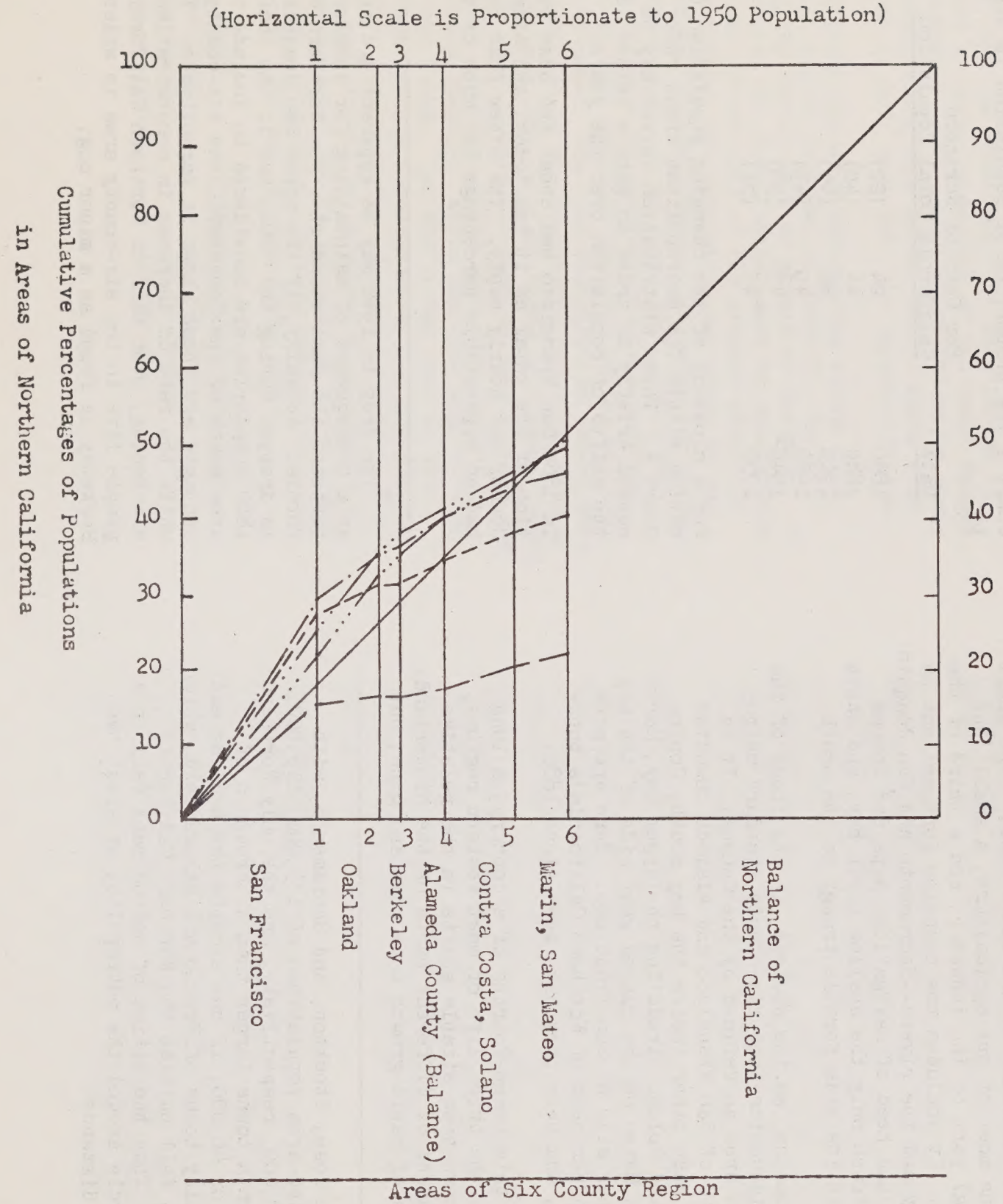
In 1860 San Francisco had about the same proportion of the total as it has today, but Alameda County was nearly empty. The other four counties had an appreciable percentage but much of this

---

[4] San Jose, Stockton, and Sacramento, with urbanized-area populations of 175,000, 115,000, and 210,000, respectively, are the only Northern California towns larger than a threshold of 30,000 or 40,000, if one excepts the nucleus and the valley towns of Fresno and Bakersfield, which tend to fall outside the Northern California orbit. Thus the cities of second rank fall in a semicircle around the metropolis, at about two hours' distance.

[5] The drop in 1940 may be apparent and not real, as a consequence of maintaining for comparative purposes the same boundaries for Northern California. Actually, if the upper San Joaquin Valley is dropped during the '20s, and if the 1860 and 1880 boundaries are considered to include the area south of the Tehachapi, the six-county percentages are those shown in parentheses. Thus, while the rate of increase in concentration is slackening, over half of Northern California's people live in the six-county area in which Berkeley is found as a minor cog.

POPULATION OF AREAS WITHIN SIX BAY-COUNTY REGION,
1860-1950, AS COMPARED TO 1950 POPULATION DISTRIBUTION
OF ALL OF NORTHERN CALIFORNIA




* Percentages are in terms of following base: 1860, 1880, entire state; 1900, 1920, California north of Tehachapi; 1940, same excluding upper San Joaquin Valley; 1950, further excluding half the middle San Joaquin Valley.

may not have been in the immediate vicinity of the metropolis but rather at a day's distance.

By 1880 San Francisco had greatly increased in dominance and had a far greater relative importance than it does today, but sparseness of population in the other counties kept the six-county total down to 40 per cent of the state's total.

In 1900 Alameda County and particularly Oakland were more important; the other four counties had only a sixth of the metropolitan population.

In 1920 can be seen the beginning of San Francisco's recession as the outer areas increased, but the bulge of the curve above the 45° line still indicates more concentration in the twin center of San Francisco and Oakland than is true at the present.

In 1940 San Francisco had shrunken more; Oakland remained the same; and the outer areas have grown further.

Between 1940 and 1950 this process was accelerated, as is shown by the large area between the two curves. In 1950 San Francisco had 18 per cent of the Northern California population, San Francisco and Oakland together had 26 per cent, and Berkeley added 3 per cent more. But 22 per cent more lay outside this trio.

Chart 4 demonstrates two trends that have been continuous from 1860 to 1950 and which are common to metropolitan regions everywhere: (a) they have grown to dominate their hinterlands, i.e., their populations have made up an increasing proportion, and the points at, say, column 10 have been raised accordingly; and (b) their populations have shifted within the region from the central cities to the outer suburban fringes, seen in Chart 4 in the straightening of the lines in the first section.

Ignoring the total growth in the region in order to see the changes inside it more clearly, the six-county population total may be taken as 1.00, finding at the different dates:

| Area | Ratio of Six-County Region's Total Population | | | | | |
|---|---|---|---|---|---|---|
| | 1860 | 1880 | 1900 | 1920 | 1940 | 1950 |
| San Francisco.... | .68 | .68 | .63 | .51 | .44 | .35 |
| Oakland..... | .05 | .10 | .17 | .19 | .20 | .16 |
| Berkeley..... | .00 | .00 | .02 | .06 | .06 | .05 |
| Balance of Region | .27 | .22 | .18 | .24 | .30 | .44 |
| Total..... | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Note that San Francisco began its decline after 1880, and that its loss was the gain of Oakland and Berkeley until perhaps 1930. Then after 1930 all three lost to the outer areas, which were on the increase as they were brought within the commuting area. The larger proportions in the outer zones in 1860 and 1880 were not then in the true metropolitan area but represented independent populations of a rather stagnant nature. The true metropolitan area, or the commuting zone, to define an urban agglomeration on the basis of the journey to work, has expanded as new means of getting to work have developed--first the ferry to Oakland and the cable cars in the city, then (about 1900) the trains and the ferry-train combinations, and then later (and later than in many other cities) the automobile and requisite bridges, tunnels and highways.

If we care to drop temporarily the six-county idea and think of just the zone in commuting distance first of San Francisco and then of San Francisco and Oakland, we arrive at a rough idea of size that is something like the following:

| | 1860 | 1880 | 1900 | 1920 | 1940 | 1950 |
|---|---|---|---|---|---|---|
| Percentage of six-county population within commuting distance. . . . . | 70 | 78 | 85 | 88 | 90 | 95 |
| Population, thousands within commuting distance . | 60 | 270 | 450 | 900 | 1300 | 2100 |

At present, although the commuting zone takes in only the bay plains and a few valleys in the hills, and thus does not touch the vast area behind the encircling mountains, it contains about 95 per cent of the people. The land outside commuting range cannot be ignored; its inclusion into the zone of activity of the metropolis may be summarized by Berkeley's history of a long period of stagnation as an independent place, then rapid filling up, followed by slower growth as structures near employment centers converted to a denser utilization. It must be recognized that this is an area that comprises only the bayward sections of five of the counties, as of 1950. (In the sixth, San Francisco, urban development has at some cost gone clear across the hills, which here are low and separated.) But just as the commuting area was smaller in the past, it will be larger in the future, and the further out it goes the more Berkeley's role will change from what it was and what it is. We can see Berkeley's past by looking at present-day areas beyond commuting range, and perhaps we can see its future by looking the other way, toward the center.

Bay Region Circulation

Circulation in the metropolitan area was patterned first by the waters navigable in small boats, and water links are still important in the rail system which took over. Basically, the rail pattern, ignoring short lines that operated up valleys like the Napa, follows the bay shore fairly closely. The open loop is entered at four major gates (see Plate 2):

1. From the east through Livermore Valley and over a saddle in the hills.
2. From the northeast along the upper bay.
3. From the south end of the longitudinal valley.
4. From the north end of the longitudinal valley.

Gate 2 carries a preponderance of the traffic, Gate 3 probably the next. Gate 1, however, was opened first, being preferred because of difficulties in getting the routes from the northeast past the hill spurs that jut out into the upper bay.

The effect of the bay barrier has been to force rail terminals to locate opposite San Francisco and to ferry across; this is especially true on the east shore where routes $SP_1$, $SP_2$, $SP_3$, SF and WP (Plate 2) terminate with the eastern traffic and most of that from the north and south. The early rise of Alameda and Oakland and later rise of Richmond is associated with these terminals, and a true double-center type

of development ensued as ports and industries sprang up around the terminals on the ample flat land and the filled marshes. Consequently, there is now about as much industry spotted along the Richmond-to-Alameda shore as there is in San Francisco itself. Although much new growth is away from these two older areas, they still split at least 80 per cent of the six-county total.

Railroads in the Bay Area, in rough order of their building, as illustrated in Plate 2 are as follows:

$SP_1$ Central Pacific (now Southern Pacific) from Stockton, ending at Alameda, ferry to San Francisco.

$SP_2$ Southern Pacific from Sacramento, the north and the east, ending at Oakland, ferry to San Francisco.

-- Southern Pacific all the way to San Francisco around south end of the Bay (not illustrated).

$SP_3$ Southern Pacific valley route to the south, joining B to go in to Oakland; also handles eastern traffic via Arizona.

$SP_4$ Southern Pacific coast route south to Los Angeles.

NWP Northwestern Pacific to the north coast area, ending at several peninsulas in the bay for ferry to San Francisco.

-- Southern Pacific link to Northwestern Pacific around north end of the bay (not illustrated).

SF Sante Fe, entering from Stockton and San Joaquin valley along upper bay, ending at Richmond for ferry to San Francisco (branch line through Berkeley to Oakland for passengers and local freight).

WP Western Pacific, from Stockton and the east along route A, ending at Oakland for ferry to San Francisco.

Road circulation follows the pattern earlier set by the railroads. Main routes of entry are about the same, with Gates 1 and 2 (US highways 50 and 40) being most important. Inside the area there are four major places where road circulation has been facilitated:

1. The Oakland-San Francisco bay bridge.
2. The Golden Gate bridge, which converted an open loop into two closed ones.
3. Broadway tunnel to the hill country directly east of Oakland.
4. Bridge from Hayward to San Mateo.

Other new roads parallel the rail lines shown on Plate 2.

In both the rail and road systems, the confining effect of the hills bordering the bay is obvious, and great congestion results along the heavily traveled long-shore routes, especially since urban development has spread along the bay plains also. Thus the former bay plain highways, El Camino Real down the Peninsula, San Pablo Avenue north from Oakland, and East Fourteenth Street south from it, have become choked city streets. Gradually they are being replaced by freeways built along the former marsh belt, which should, like the rail lines, maintain somewhat more efficient travel into the center of the bay metropolis.

Greatest congestion is found on the San Francisco-Oakland bridge, which carries much through traffic

into San Francisco in addition to serving commuting needs and linking the double center of the region. In addition, it is the member common to the two closed road loops, one around the upper bay and one around the south arm; and hence carries traffic from long distances north and south of its two ends.

Water transportation had most of its terminals in San Francisco until about 1920, and freight was brought to them by bay and river boats as well as by rail. More recently the usual tendency for ports to move closer to the transbay rail terminals and to production areas has been evident; and Oakland and Alameda harbors have developed rapidly, especially for food export, Richmond harbor for oil and machinery, Stockton for food and cotton. Some freight is handled at upper-bay industries, and when Sacramento and Redwood City (for San Jose) enter ocean trade the central ports may be by-passed. Thus, as with population, there has been a dispersion in this third stage of urbanization, not only to the immediate transbay cities, but also to outer zone locations.

Air traffic, in its brief life, has seen a similar outward migration as commercial fields on Treasure Island and Alameda were taken over for military needs. The two largest fields extend onto made land on opposite shores of the south arm of the Bay, somewhat off the center of gravity of the metropolitan region. The large military fields are further out. Private planes of the Bay Area, which number 1600, use fields on the fringes of the urbanized area, the nearest to Berkeley being at Concord.

To sum up the matter of access to the metropolitan center from the hinterland or other metropolises: water transport, from the ocean, for a long time confined to deep water just inside the bay mouth, has begun to penetrate the shallow waters of bay and river and thus to perform the function that was first done by river boats and later by railroad and truck. Railroads all end in the area; none go through it, a consequence of its off-center position with reference to its hinterland. About 20 per cent of rail freight traffic is for ocean shipment, and a part of this indicates a changed role for San Francisco--from a port serving a limited hinterland to a world port intermediary between the United States and the Pacific rim, particularly important in the last decade. Highway transportation, mainly of hinterland raw materials for manufacture or consumption in the city or of wholesale trade outward, like the railroads, mainly follows the narrow belt between tidewater and one or two hundred feet elevation, and has caused the creation of new freeways lying longitudinally in the region. Air terminals are also tied to the bayshore.

Bay Region Land Use

Consideration of land utilization inside the six-county area starts with the basic question of "how much?" There is a total of about 3,300 square miles, 3 per cent of Northern California's total. Of this, about 1,900 square miles lie within the higher mountain chains[6] and are not too hilly or marshy to be used, if there is

---

[6]Tamalpais and Skyline on the west, Diablo, Altamont and American Canyon on the east.

enough pressure for land. Not more than 500 or 600 square miles can be called flat. Some of this, however, like the Livermore Valley, is distant from the center buy may yet be destined for early urbanization.

The two earlier stages of growth covered approximately 30 and 120 square miles, respectively. In 1890 urbanized land was mostly located in San Francisco and Oakland, with small spots at other tidewater points around the Bay. By 1920 rail and streetcar communication had spread the urbanized (though not always solidly built-up) area over most of San Francisco (40 square miles), in spots down the Peninsula (10 square miles), in Marin County (10 square miles), and in a 20-mile strip on the opposite shore (60 square miles). It was in this second stage that Berkeley grew to its main outlines.

Since 1920, perhaps 200 additional square miles have been urbanized, although more lightly. These include view slopes in the hills, made land in the marshes, peripheral growth of old rail towns in Marin and on the Peninsula, longitudinal extensions of the East Bay strip, valleys in and beyond the Berkeley hills, and considerable ribbon development along all highways. Most of these accretions, whether residential or industrial in nature, can be recognized as having been made possible by use of the automobile, not only for access from the center but also for access to otherwise isolated industries in the outer zones.

Automobile access has furthered the trend of industry to locate in many parts of the region, reducing the concentration in San Francisco and the shore opposite. Heavy industry along the upper bay and just south of San Francisco antedate the auto; but this decentralization has also been furthered in the third stage of growth; and one can see the diversified fabric of the true region developing.

We can distinguish major industrial areas and compare their contribution to the value of their products in 1919 and 1947 as one index to their importance:

| Area | Value Added by Manufacture as Per Cent of Six-County Total | | Industrial Area in Square Miles |
|---|---|---|---|
| | 1919 | 1947 | 1949 |
| Six-County Total[1] | $100 | $100 | 35 |
| San Francisco... | 43 | 39 | 3 |
| East Shore[2]..... | 34 | 34 | 9 |
| Balance of Alameda County[3] | 3 | 10 | 8 |
| Upper Bay..... | 14 | 11 | 10 |
| San Mateo County | 6 | 6 | 5 |
| Total ($000,000) | $360 | $1,048 | - |

[1]Mare Island and other Federal institutional establishments are not included.

[2]Includes Richmond, Berkeley--Outer Harbor, Alameda--Inner Harbor, East Oakland.

[3]Emeryville and the outer zones.

During the 28 years (1919-1947) in which San Francisco has lost in relative output, the east shore groups have stayed about the same, while the balance of Alameda County, presumably the outer zones, has grown. The upper bay dropped in importance, and the South San Francisco complex has remained about the same. The two central groups still dominate the region. With regard to decentralization,

it should be mentioned that just outside the six-county region growth was even faster, especially around Stockton and San Jose. Thus the belt of factory growth, which passed the East Bay some thirty years ago, is still outward bound.

1947 per-capita values added by manufacture are about the same--$500 to $600--in the major industrial zones. In the parts of the region that are usually regarded as non-industrial, Marin and southern San Mateo Counties, they are far smaller --about $100 or less. Cities in the East Bay averaged as follows: Oakland, $550; Richmond, $520; Berkeley and Alameda, $490.

A type of land use that often is quasi-industrial in nature and that is of supreme importance in the six-county area is the military type, most of which has come in the last decade. Military land uses include some works for local defense at the Golden Gate; but primarily they are links in the Pacific war machine, either bases or parts of the supply pipelines. On the Golden Gate are the Presidio and Fort Mason, primarily administrative centers; on the shores of the central Bay are the San Francisco Naval Shipyard, Treasure Island, and the vast east shore depots and port, occupying most of Oakland's outer and middle harbors and the west end of Alameda. One of these alone, the Naval Supply Depot, is the largest employer in Oakland. In the outer zones of the region are Mare Island, training camps, staging areas, ammunition depots, and several large air bases. These activities are very important in the total Bay Area picture. An idea of their size can be gained from figures on governmental employees: all levels of government had 150,000 employees, or 17 per cent of the total employed persons; about 90,000 persons are employed in public administration, so a large number remain as civilian workers in the military installations.

Wholesale trade is a major support of the Bay Area. It is now, in spite of recent rapid growth in Oakland, 80 per cent concentrated in San Francisco. The amount outside these two centers is very small. Oakland has 13 per cent of Bay Area wholesaling; Berkeley has 1 per cent.

Retail sales and hence the major parts of the land devoted to commercial pursuits are usually regarded as being a residential development, and when Northern California is considered this is found to be generally true. The Bay-Delta core, with 64 per cent of the population, had 65 per cent of the retail trade. The six-county region, with 45 per cent of the population, had 47 per cent of the trade.

Within the six-county area, however, there is a tendency for retail trade to concentrate in San Francisco and Oakland, since one or the other is within easy reach of people in the outer areas. With respect to the region we have the following percentages:

| Area | Per Cent | |
|---|---|---|
| | Retail Trade | Population |
| San Francisco..... | 44 | 35 |
| Oakland..... | 23 | 17 |
| Berkeley..... | 4 | 5 |
| Richmond..... | 3 | 4 |
| Alameda..... | 2 | 3 |
| Balance of Alameda County... | 4 | 7 |
| Upper Bay..... | 9 | 14 |
| Marin County..... | 3 | 4 |
| San Mateo County..... | 8 | 11 |
| Total..... | 100 | 100 |

Thus most of the retail sales are made in San Francisco and Oakland, and the other parts of the region share in this trade at about 70 per cent of what would be expected on a strict per-capita basis. (Smaller scale differences are seen in looking at per-capita sales for individual cities which serve large unincorporated areas, such as Hayward; its sales are about double the $1,080 average per capita in the region.)

Concentration of retail sales in San Francisco and Oakland is somewhat greater than that found generally over the United States. For the entire country's metropolitan areas, 72 per cent of the sales are made in central cities, which have 60 per cent of the population. San Francisco and Oakland combined have considerably less of the population (52 per cent instead of 60 per cent), but only slightly less of the total amount of sales. Since 1939, rates of growth have been slightly below average in San Francisco, about average in Oakland and Berkeley, and above average in outlying centers.

About 120,000 people are employed in retail trade, in addition to the large number of proprietors. The increase in the past decade has been about at the same rate as the increase of population. Almost half the employees work in San Francisco, where the sales per employee are somewhat less than the regional average. San Francisco has 48 per cent of the region's retail employees, Oakland 24 per cent, and Berkeley 4 per cent; the rest are distributed according to populations but in smaller proportions than in the central cities. The 1939-1948 increase in retail employees averages 51 per cent for the region but is much less in the central cities: San Francisco, 30 per cent; Oakland, 46 per cent. Berkeley with a 36 per cent increase is also tending relatively to drop behind the rapidly growing fringe areas.

One significant function of the Bay Area is that of the managerial capital for Northern California. Much of the activity of the five million people is directed from a central location. Modern writers have often noted the twentieth-century rise of large management offices and their vast amount of paper work. These offices, both private and governmental, are particularly prominent in San Francisco, where 23 per cent of all employed persons are engaged in clerical occupations. The East Bay has relatively little of this activity, since the management function is most ideally suited to centralization in San Francisco, attracting its workers from considerable distances, and requiring no raw material other than instantaneous communication. However, some signs of decentralization can be seen in the Bay region; and Berkeley has a number of such offices, some of which are directly concerned with agriculture and were perhaps drawn by the agricultural work

formerly prominent at the University. The settlement of this headquarters type of enterprise in Berkeley has been generally welcomed by the citizens of the city, for it establishes a stable clerical and professional employment base within the city. There is a growing body of evidence which suggests that large firms whose headquarters are presently located in San Francisco are desirous of moving into the outer portions of the region; and should this movement become appreciable, Berkeley and the East Bay may become the locus of a greater concentration of clerical employments.

In relation to Northern California, the Bay Region has great recreational potentialities, which are possible large sources of income. People from the hot monotonous-appearing inland valleys feel themselves fortunate to live close to the coast, the bay and its rocky islands, the hills, and especially the cool summer. The metropolis also is a focus for urban-type recreation--plays, night clubs, opera, restaurants--not only for hinterland dwellers but also for tourists and convention delegates from all over the country. It has held this position since the days of gold, and the use of the auto has strengthened it.

For its own two and three-quarters million people the Bay Region has parks of a regional nature, such as those along the East Bay hills. Otherwise the East Bay has not been abundantly blessed: the shore is low and muddy, neither scenic nor usable, and was valued so low that it was allowed to become badly polluted; and there is little recreation of an urban type. The beach-mountains-desert combination that has been of such benefit to Southern California has not developed here.

The East Bay and Berkeley

The focus may now be turned more closely to the East Bay part of the double metropolitan center and to Berkeley within it. Attention has been given to the whole Bay Region and its place in Northern California's life because, as has been noted, neither the meteoric rise of Berkeley some thirty years ago nor its later static condition could be understood without its placement in the proper setting. This younger brother of the double metropolis contrasts with San Francisco in many ways. Physically it is the opposite of the West Bay, which has steep hills near the water, little flat land or shallow water, because the silt is washed on out to sea. At the east side, quiet water has permitted building up of deposits from the hills behind or from the sediment of the rivers, and the resulting alluvium, half in and half out of the water, forms a long strip suited to human occupancy. The bay plain is broken by hill areas on older deposits and diversified by sand banks like those upon which Oakland and Alameda were founded. The main drainage from the Berkeley hill block behind the plain is longitudinal and issues out on the plain some ten miles north and south of the point that juts out across from San Francisco. Within this central section the creeks are small and flow straight across from the hill block to the shore.

Development of the east shore plain also contrasts with San Francisco's hills. Although now crowded, it had, when first built up, very liberal standards of low density for that time. The urban strip, which stretches nearly 30 miles from the edge of the tidewater plain at San Pablo to the expanding periphery in the wide plain south

of Hayward, is the product of several factors which have tended away from the degree of centralization that has occurred in the West Bay. After the first decades, development on the hills behind began to be evident and expansion became longitudinal. This expansion was promoted by the commuting railroads and the real estate interests (often indistinguishable); and the growth of industry at nodes away from the center of the strip, such as Richmond, Emeryville, the inner harbor and Alameda, and San Leandro, tended to parallel the residential areas with working areas. Some of these were connected with San Francisco by ferries radiating from the Ferry Building, and their growth was not altogether dependent on activities centralized in the older section of Oakland, as is shown by the number of former and present political entities. Also there was a general desire for more living space, better density standards, and a more congenial climate, all of which aided the extensive spread of the Easy Bay cities.

Industrial expansion was aided by the fact that rail lines enter at the ends of the plain and run through its entire length, usually near the shore where they cause minimum interference with residentially desirable land. Highways also follow this pattern but conflict more with living areas. The airport has long occupied a site on what was an offshore island south of the center. The East Bay has good contacts with Northern California and has tended to grow faster than San Francisco during the second and third periods of growth.

The multi-nuclear type of development found in the East Bay strip is reflected in the fact that there are several well proportioned commercial centers, including a number in Oakland, that had independent origins and which have more than half the total retail sales. Berkeley and Richmond follow at a distance with about 10 per cent each. Towns near the northern and southern ends of the agglomeration have grown faster during the past decade than the central areas. Per-capita figures indicate that Berkeley did not serve a large population outside its own limits in 1939, but that its position improved somewhat by 1948: its share of trade decreased less than its share of East Bay population.

Regional recreational facilities were virtually non-existent until 1935, wher the parks in the valleys just back of the crest of the Berkeley hills were established. These serve most of the length of the urban community, but there are few parks utilizing the marine resources of the bay, except those around Lake Merritt.

Residential uses of course occupy most of the land of the East Bay strip, and except in one place (directly opposite central Oakland) they are limited on the east by the Hayward fault line. They spread over the plain itself, over terrace remnants, over foothills; but they have shown little tendency to advance bayward. Generally the highest rent residential districts are on higher land at the edge of the hill block; but before the city reached this size the best districts were on sand deposits that rose a little above the general low level of the plain. West Oakland was one of these, and parts of Alameda continue to be. The second locale of first-residential areas was on the terrace just northeast of central Oakland, with the University

vicinity coming a little later. The next shift was to the central foothill belt that stretches from upper Park Boulevard through Piedmont to Rockridge and Claremont in Berkeley, and to the north Berkeley foothills. As these districts filled, bordering areas on the main hill block itself (Montclair and Berkeley's outer hill zones) were settled; but there was also a jump beyond the hills to Orinda and Lafayette. Medium-rent residential districts developed more or less parallel to those just described, advancing in the middle of the plain north from Oakland and along the upper edge east of it. Low rent districts spread both east and north in proximity to industries along the railroads and occupied large parts of the plain inland in East Oakland. Multiple-unit dwellings are clustered around Lake Merritt, close to Oakland's downtown; four- or six-unit structures have spread north as far as Forty-Fifty Street. Another concentration occurs near the campus, and in the last ten years duplexes and "fourplexes" have been scattered over other parts of North Oakland and Berkeley where vacant land had remained. As West Oakland was abandoned by the upper income groups, it was occupied by successive waves of recent arrivals, beginning with the Irish; the most recent group to move in has been the Negro. Parts of north Oakland, lower sections of East Oakland, and south Berkeley are also populated by Negroes and Japanese. Italians from San Francisco settled Temescal, now in North Oakland; and much of East Oakland was occupied by dustbowl migrants. The most recent wave of immigrants into the Bay Region was attracted by the great shipyards at Richmond and came mainly from Oklahoma and Texas, both whites and Negroes. A Chinese group has long existed at the south side of downtown Oakland. Peoples brought to California for agricultural work more recently than the Chinese and Japanese are generally not urbanized and are not represented to any extent in the East Bay.

Circulation within the East Bay strip is hampered by the narrowness of the urbanized area, and hence its excessive length, and also by creeks, lakes and hill areas outlying from the mountains which have prevented the development of true longitudinal arteries to the extent needed. In East Oakland, for example, all except one of the longitudinals have to go around the south end of Lake Merritt and hence feed into the downtown area; in North Oakland and Berkeley the major longitudinals all converge on downtown Oakland, having originated as country roads. The concentration of routes in downtown Oakland complicates the problem of north-south traffic a great deal. Furthermore, much traffic between San Francisco and East Oakland has always had to go through this center. In contrast, San Francisco access to north Oakland and Berkeley, and formerly to Alameda, was fairly direct and constituted a second set of arteries. One of the bridge approaches connects with the East Oakland longitudinal mentioned above which avoids the downtown area (MacArthur), and new traffic foci have developed along this crosstown-longitudinal avenue. Crosstown streets are short; and many of them are blind, stopping short at either end. In the past fifteen years new longitudinal routes have been built with limited access, at the water's edge; although parts of the state highway system, these also carry much of the longer-distance intra-East Bay traffic. Within the arterial pattern, streets were laid out in mismatching gridiron patches, the result of efforts

to run local streets at right angles to the arterials which turn to follow the shoreline or to ascend a valley, or, as is seen north of the center, continually diverge and split to cover the whole area. The poor connections between neighboring street patterns tend to confine traffic quite closely to the arterials. Local streets are contoured in many of the hilly areas that were subdivided since 1910. In rectangular areas the long direction of the blocks is usually normal to radii from downtown Oakland, e.g., in south Berkeley the blocks run east and west.

Less like San Francisco than like Los Angeles, the East Bay area has taken up the extensive use of private automobiles for local transportation, although the links for a Bay Region system were not completed until 1935. The local transit system serves a region which has one of the lowest riding habits in the country. Most of its car lines were laid out on the longitudinal arteries, and busses were used as feeders on the crosstown streets and in the hilly areas; they have gradually replaced streetcars on the main routes as well. Local service rendered by the San Francisco trains has recently increased to about 5 per cent of the total. The lack of crosstown service, which may be important in view of the fact that industries and residences lie parallel to each other mile after mile, plus the slowness of longitudinal service (there are few express routes) may help account for the extensive use of autos for getting to work.

Berkeley belongs to the zone added to the metropolitan center about 1920; the third period of urbanization has largely passed it by for greener pastures farther out. At the same time, however, industrial growth which under some circumstances would be forcing its way into this ring has tended, also, to occur in outer areas that are less crowded. So Berkeley remains industrially at the edge of the development that has worked back up the tracks from the port of Oakland. We have seen, too, that its other major employment center, the University, has progressively been de-emphasized by the rise of hinterland colleges and has not grown proportionately with enrollment of Northern California.

The Municipal Yearbook, 1950 groups suburbs in four rent levels, three of which were found in the Bay Area in 1940. Top or third level suburbs were San Mateo and Burlingame, no East Bay cities being named; although Piedmont, if large enough, would qualify. Second level towns were Berkeley, Redwood City, San Leandro, Alameda, and Albany, whose rent level approximated that of the metropolitan regional average. Lowest level town was Richmond.

Another inter-city comparison may be made on the basis of the number of citizens employed in manufacturing, as compared to the number employed in manufacturing, trades, and service occupations. In 1940 in Berkeley this proportion was 31 per cent, about the same as Oakland, more than San Francisco, and distinctly more than Peninsula towns, which averaged 10 per cent. The proportion of manufacturing workers in Alameda was slightly higher than in Berkeley, and in Albany and Richmond (73 per cent) it was much higher. Actually, Berkeley's ratio is the one that would be expected if a third of the city had Albany's ratio of manufacturing workers and two-thirds had the Peninsula ratio.

To sum up Berkeley's place in the East Bay, it may be said that physically it is a slice of the plain and hills, relatively uncomplicated by terraces or creek inlets. The parallelism of shallow bay, ascending plain, and steep hill front is broken only at the southeast corner where a longitudinal valley opens and at the northeast, where foothills lie in front of the main hill block. It shares the equable climate of the East Bay with the rainy winters and cool rainless summers. Economically it is a labor source, but has its share of manufacturing; there is little trade outside the region but education and some management offices are functions with external contacts, which add to the region's balance of trade. Basically, however, many features of its origin and development are associated with the region that contains it, and this point will not be lost sight of in the following pages.

Berkeley's Origins

Having touched on some general features, Berkeley's development in the East Bay industrial-suburban complex may now be examined.

By 1880 the farmlands of the Bay Region had been settled and small market towns and shallow-water ports had grown up, all within a day's trip of San Francisco which, with almost 30 per cent of California's population, was a large city that practically embodied urban civilization in the West. The largest of the Bay Shore satellites was the one directly opposite San Francisco's offshore location, in one of the places that might have been the original metropolis had settlement come later and by rail instead of by sea, as a number of geographers have noted. Oakland had been founded on a sandy rise on the bay plain on the shores of a deep tidal creek that drained terrace lands at the inner edge of the plain. This creek entered the bay just south of the point where the Southern Pacific Company established the terminal for the transcontinental rail line, and by 1880 Oakland had grown to a city having 10 per cent of the region's people. About five miles north of this creek a smaller one ran across the flat plain into the shallow bay, and a small settlement had grown up there, stretching between the shore and the long-shore road from Oakland to San Pablo farther up the coast where the bay plain pinched out. This settlement, on a shallow creek and a shallow bay, began to grow as industries established themselves along the railroad and became the town of West Berkeley. The foothill twin to this place was also being started on a road north from Oakland, the Telegraph Road. It was at the south edge of the new campus of the state University, which had moved to this rural site some years before. About 2,000 people lived here.

Ferrier[7] has described the make-up of Berkeley when the town was incorporated in 1878. There were two residential areas, i.e., around the campus and West Berkeley, former Oceanview, Lorin being outside the original boundaries, and three business centers--the old one at the end of Telegraph Avenue, one just beginning at the Southern Pacific station at Center and Shattuck, and one in West Berkeley. Each of these had its own transportation to Oakland or San Francisco--the Telegraph dummy-line to Temescal and Oakland, the Southern Pacific Berkeley line (then steam) and the Southern Pacific main line along the shore, just completed. There was no transportation

---

[7]Ferrier, W. W., The Story of the Evolution of a Hamlet into a City of Culture and Commerce, Berkeley, 1933, p. 406.

between these districts. The first election following incorporation was a struggle between the Workingmen's and the Students' parties, in which the former won. Thus, although the city was incorporated as a unit, it was far from being one in reality.

The period from 1880 to 1920 or 1925 marked the change to a rail economy, as far as California was concerned, and the shift of the metropolis from a position as port-of-entry to the mines to headquarters of a wealthy agricultural province. Within the metropolis, with its dual center, a dense rail circulation system had developed, utilizing cable cars for close-in areas, streetcars for longer distances, interurban lines with ferry connections and steam lines. The bunching of the great office buildings of San Francisco within a half mile of the bay shore caused it to be but little costlier in time (and originally it was no costlier in cash) to live across the Bay than beyond the hills of the old section of San Francisco in the newer residential areas on the cold ocean side of the Peninsula.

The east shore north of Oakland was particularly well served by these ferry trains, since the flat plain offered few obstacles. On the other hand, much of the land on the other side of Oakland was shut off from interurban connections by Lake Merritt and wide dissected terraces, while land beyond Berkeley was similarly isolated by hill belts approaching the Bay, as well as by greater distance. Hence, the zone most built up by San Francisco commuters, by families fleeing San Francisco after the 1906 earthquake, and also by workers in industries near the Southern Pacific mole, was North Oakland and Berkeley--a wide featureless plain about six miles long and two to three miles from the shore to the abrupt edge of the Berkeley block of mountain land. This whole area grew phenomenally; and by 1920 about two hundred thousand people lived in it, a quarter of them in Berkeley. Two circulationpatterns covered this plains area, neither of them much influenced by topography. One set comprised radial roads diverging from the old city of Oakland; the other set was formed by the lines of the two commuting railroad systems, diverging from the Southern Pacific mole or the Fortieth Street Key System pier. Berkeley alone had seven of these lines to San Francisco and at least six streetcar lines along the radial roads to Oakland. Further south the two patterns criss-crossed, but in Berkeley their directions more or less coincided, giving a strong north-south orientation to the pattern. East-west communications were much weaker, and the pair of original settlements, West Berkeley and the campus town, each had individual connections to Oakland and San Francisco, without much intercommunication. In fact, a wide belt of unbuilt-up land separated them. The first commuting line into Berkeley was a steam line of the Southern Pacific, which avoided the Telegraph Road center in order to pass the campus barrier on the west and run on a mile north to Berryman, where some of the oldest houses of the city still stand (Tract 5D, 27 per cent of residential structures over 50 years old. See Plate 31.) Key System lines came in by 1903, and soon afterwards the Southern Pacific electrified. The Key carried on extensive promotion of real estate; and Berkeley filled up rapidly, the rate being especially accelerated by the 1906 disaster in San Francisco. The campus was an additional attraction to many new residents and in addition was a major support

to the town, being in fact an employment center that drew up to 10,000 people from other parts of the state.

The Santa Fe built into the Bay Region just after 1900, and both it and the Southern Pacific Company had stations on the street leading from the campus to West Berkeley. The railroad pattern of the region was such that all trains from San Francisco to the Sacramento Valley and north, to the east, to the San Joaquin Valley and to Southern California, except via the less traveled coast route, went through Berkeley stations, giving direct service to a large part of the state.

The whole area that had suddenly been brought within the commuting zone filled up in about twenty years with few gaps. Major empty places were the northeast quarter, north of Rose Street, shut off behind the campus and also too hilly for interurban cars, and the strip west of Sacramento Street, between the two original nuclei. Both gaps had streets, but there were only occasional houses. The 1923 fire wiped out many older structures north of the campus and thus led to rejuvenation of this part of town; the actual loss in structures was rapidly made good by increased construction and had little influence upon the city's growth.

At the same time, the East Bay was forging ahead as an industrial center, with most of the new factories in the zone extending north along the mainline Southern Pacific tracks from the mole and merging into the West Berkeley industrial zone. In 1919, however, the value added by manufacture in Berkeley was only 9 million dollars, only 2.5 per cent of that of the entire Bay Region. Although the importance of industry probably increased by 1925, West Berkeley probably to a large extent occupied a position similar to that which Albany now occupies, that of dormitory for workers employed to the south. A resume of the composition of Berkeley's population at this period would reveal the three main groups that still characterize the city--those associated with the University, the locally-employed industrial personnel, and the industrial and professional commuters.

Berkeley's Recent Development

In the third stage of California's growth (1935-1950), culminating with the westward migration of the war and postwar periods and with the increased use of the automobile in metropolitan circulation, Berkeley grew in two ways (although more slowly than did the Region): (1) through the filling in of unoccupied gaps, both the west side strip and the hills, and (2) through increases in densities in occupied sections, by conversion of old houses and by apartment building. The zone of rapid growth in the East Bay continued on through East Oakland and into the open bay plain beyond San Leandro, and to the north it expanded through Albany and El Cerrito and reached out from the growing industrial center of Richmond. This growth took place in spite of the lack of rail commuting facilities in these areas; in fact, commute lines disappeared on every hand and were only in part replaced by bus lines. Berkeley by 1950 was 15 miles from the southern periphery of the East Bay strip, and 8 miles from the northern; some Berkeleyans desiring suburban life traveled 8 to 10 miles east, through the hills, to the Lafayette area.

A traditional picture of Berkeley is that of a commuter town par excellence. This is largely true, but not entirely so in the classic meaning of the term. In 1940 Berkeley's ratio between number of jobs in a sample group of occupations and the total number of employed citizens was 26 per cent, about the same in San Leandro, Alameda, and the larger Peninsula towns.[8] This means that about half of Berkeley's citizens who are employed in manufacturing, trade, or services can work in Berkeley, with the other half working in Oakland or San Francisco. Since the ratio expresses a net transfer of workers, it shows the amount by which emigrants exceed incoming workers, as for example from Albany or Lafayette. In other occupations, notably those associated with the University, Berkeley is to some extent a center that brings commuters from other parts of the East Bay and from San Francisco.

Passage of the expansion zone beyond Berkeley in this period is also seen in the ages of its people. In the heyday of Berkeley's growth about 23 per cent of the population was younger than 15 years, and about 6 per cent was older than 64. In 1950 these proportions were about[9] 20 per cent and 11 or 12 per cent respectively.[9] In other words, children were proportionately fewer and older people about doubled in proportion. The 1950 figures for the six-county area were 24 per cent and 8 per cent; there were three times as many children as aged, but in Berkeley there were under twice as many.

During this period, or perhaps beginning slightly before 1925, a racial change in the population began to take place and a large part of South Berkeley west of Grove Street became inhabited by Orientals, largely Japanese, who had moved in as their standard of living improved. They were soon joined by a relatively large Negro group, many of them in employment with the railroads. With the relocation of the Japanese during the war, the area became the home of most of Berkeley's increased Negro population. Perhaps 15 per cent of Berkeley's population now is non-white.

In recent years another change seems to have occurred which is difficult to document except indirectly. It is the growth of what may be called a white-collar commuting group, i.e., a group which is composed neither of industrial workers nor of professional workers or proprietors. Much of the southern part of Berkeley, east of the non-white area, seems to have filled up with clerical workers who are employed in the offices of San Francisco and Oakland.

To summarize in terms of the occupational or racial characteristics of Berkeley's citizens, it is seen that the predominant trio (industrial workers, high-income commuters, and University faculty and students), although still in the central position, has given way in some quarters to three newer recognizable groups--the retired aged, the non-whites, and the white-collar young people. In general, the first two of these newer groups are in Berkeley to stay, but the third

---

[8] Municipal Yearbook, 1950. Ratio for the six-county region was about 50 per cent. The numerator of the ratio is low because data for jobs in many occupations are not available.

[9] From correlation with Oakland over the last three decades.

group expects to move to suburbia when it comes time to start a family. Perhaps if successful they can later return as members of the professional commuter group.

During the 1935-1950 period too, one of the earlier groups, the students, had been depleted within Berkeley. Although it is still their work place during the semester, about 15 per cent of those that come here from outside the Bay Region have had to live outside Berkeley and to commute daily. Possibly more students coming from within the Bay Region commute, instead of trying to live on campus, than in former years, but this cannot be established. The University now combines two functions: a residentiary one for local students, making up for the lack of colleges in the East Bay; and a specialized one of advanced study for the entire state or even larger areas.

Nothing can be said yet about recent changes in the industrial worker group or the professional group. In 1940 craftsmen and operatives (21 per cent of total employed) were less well represented than in the Bay Region generally (28 per cent); however, by 1947, the value added by manufacture reached $54 million or about 5 per cent of that of the whole Bay Region. The fact that Berkeley's manufacturing importance in the region doubled since 1919 does not necessarily mean that its industrial population gained in proportion. The professional and managerial groups made up 29 per cent of the employed population in 1940, as against 20 per cent for the Bay Region; no data are available with respect to recent changes in this group.

The semi-log graphs of population (Chart 5) show this third period of growth fairly well. All rates slumped during the '30s, when the depression affected both Northern California and its metropolitan cities; but during the '40s, when the populations of Northern California and of the six-county region increased by half, Berkeley's population increased by only 16 per cent or about 19,000 people; and many parts of the city were completely static.

The following tentative estimates of the present status of Berkeley's jobs and workers are presented in lieu of information from the recent census, not yet available. The balance of workers, however, probably does not vary a great deal from the results shown.

Jobs in Berkeley

| | |
|---|---|
| Manufacturing..... | 7,000 |
| Trade..... | 5,000 |
| Services, etc..... | 15,000 |
| University..... | 20,000 |
| Total number of jobs..... | 47,000 |

Berkeley's Workers

| | |
|---|---|
| Commuting to outside jobs..... | 25,000 |
| Coming into Berkeley..... | -10,000 |
| Local jobs..... | 47,000 |
| Total number of workers..... | 62,000 |

In these figures University students are included with workers. Thus Berkeley is still seen to be a labor-exporting city, although perhaps not to the extent that it has been in the past. Transbay commuting is still heavier from Berkeley than from other East Bay cities; the train and busses of the

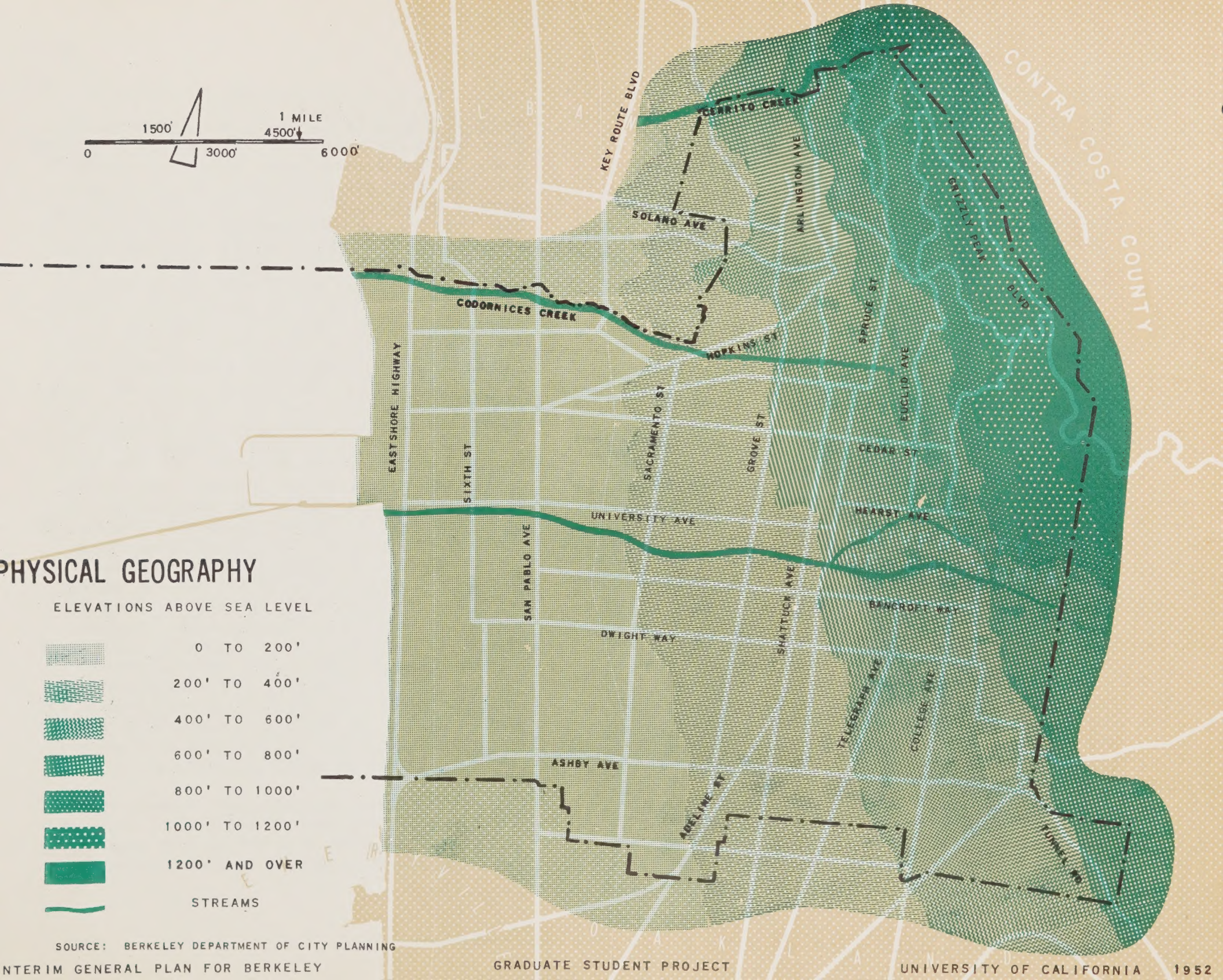
Bay bridge in 1946 carried 15 per cent of Berkeley's population each way daily, but only 11 per cent of Oakland's, 8 per cent of Alameda's, and 5 per cent of Richmond's.

Physical Influences within Berkeley

Berkeley, for its size, has an amazing number of diverse environments. One speaks of the central business district, the campus, the waterfront, the factory area when he is concerned with working areas; one speaks of Thousand Oaks, West Berkeley, Elmwood, South Berkeley, the hill areas, Claremont, Westbrae, north of campus, and south of campus when he is concerned with living areas. This internal differentiation of the city is based upon several physical facts. It is based on topography, as when the hills are contrasted with the flat; it is based on the campus as a barrier that strikes nearly to the heart of the city, as when reference is made to the north and the south of campus; it is based upon the age of settlement; it is based on the incidence of multiple-dwelling structures; it is based on the appearance of the houses in each neighborhood; it is based on rent levels. Also, the internal differentiation is based on such characteristics of the inhabitants of each area as the race, the occupations, the number of young children and of old people. These phenomena will be discussed in later sections of this report in their present-day aspects, as foundations for the physical plans for residential and other areas of the city. Here the interest is in their origin and development.

This examination may begin with Berkeley's underpinning--its topography and climate. The Berkeley block of hills rises at the east, striking southeast and northwest. South of the University its front is steep and joins the plain abruptly. The front is broken at Claremont and Strawberry canyons, which are too narrow for much urban development; the intervening slope facets rise suddenly from the inner rim of the plain at 300 feet to about a thousand feet. The crestline peaks farther back are almost a thousand feet higher still. North of the University, on the other hand, the crestline descends and flattens, while in front of the block itself is a foothill area which includes volcanics and which grades into the main block. This slope has almost a southern aspect and most of it has a steepness of less than 20 per cent, in contrast to the precipitous block face to the south. The line of 10 per cent slope runs across the city from the Claremont corner almost straight northwest past the Thousand Oaks business center. With minor exceptions, it marks the line where rectangular street patterns give way to contoured streets. Seaward, and sloping with decreasing steepness down from 200 or 300 feet elevation, is the bay plain with four-fifths of Berkeley's people. This is alluvium spread out at the base of the hills and is continued just beneath the surface of the Bay for another two miles or so, where it has been built up by silt from the rivers. The plain is directly crossed from mountain front to bay by a number of streams whose shallow valleys are followed by gallery forest. Otherwise, Berkeley was not naturally and is not now heavily vegetated in its plain section. At the higher elevations, however, the greater moistness has resulted in a uniquely luxuriant growth of shrubs and trees.

Berkeley's climate is mild, with a small range of temperature between winter (48°F mean) and summer (62°F mean), and few very hot or very cold days. The temperature is highest on the occasional


1500'
1 MILE
4500'
0
3000'
6000'
KEY ROUTE BLVD
CERRITO CREEK
SOLANO AVE
ARLINGTON AVE
GRIZZLY PEAK BLVD
CONTRA COSTA COUNTY
CODORNICES CREEK
HOPKINS ST
SPRUCE ST
EUCLID AVE
EASTSHORE HIGHWAY
SIXTH ST
SACRAMENTO ST
GROVE ST
CEDAR ST
HEARST AVE
UNIVERSITY AVE
SAN PABLO AVE
SHATTUCK AVE
BANCROFT WAY
DWIGHT WAY
TELEGRAPH AVE
COLLEGE AVE
ASHBY AVE
ADELINE ST
HUNEKE RD
PHYSICAL GEOGRAPHY
ELEVATIONS ABOVE SEA LEVEL
0 TO 200'
200' TO 400'
400' TO 600'
600' TO 800'
800' TO 1000'
1000' TO 1200'
1200' AND OVER
STREAMS
SOURCE: BERKELEY DEPARTMENT OF CITY PLANNING
INTERIM GENERAL PLAN FOR BERKELEY
GRADUATE STUDENT PROJECT
UNIVERSITY OF CALIFORNIA
1952

spring or fall days of north wind or foehn, but has seldom gone over 100°F. It is coldest, too, with the north winds from the interior in the winter; but seldom does the temperature fall below freezing. Exposed to the full sweep of the in-blowing sea breeze during the summer, the highest temperatures are not reached until the breeze dies down in September and October. June, July, and August are in fact rather cool. The flat areas are covered by low cloud and exposed to the cold wind through the Golden Gate, while the hills are actually in the cloud sheet which piles up against the southern part and blows on over the lower northern crest. Higher parts of the hills may be above the cloud sheet, especially in the morning, and in the warm dry air above the layer of marine air.

Rainfall at the eastern edge of the plain is about 23 inches; it is slightly less near the bay and considerably more at higher elevations. The rainfall regime progresses regularly from about a quarter of an inch per month in summer to almost five inches in the January maximum. Most of the rain comes in the typical general storms of winter, which last two or three days and are usually separated by a week or more of fair weather. Storm winds are mostly from west or southwest, and the summer sea breeze is also westerly. A large part of Berkeley is directly leeward of the industrial section, as is obvious during the canning season.

A major characteristic of the physical pattern of Berkeley is the street and railroad layout of this part of the eastshore plain. The hill block has performed the service of forcing rail and highway routes (with one exception) to go around the end; the foothill areas of North Berkeley and of Central Oakland have also forced the through routes down to the waterfront, so that Berkeley's situation is much different from that of midwestern cities, criss-crossed with rail lines in every direction. The Southern Pacific, with its 40 or more trains a day, interferes little with local traffic; and while the Santa Fe Richmond-Oakland line runs through a residential area, it carries little traffic and exists on a temporary basis. The two main highways, San Pablo Avenue and its successor, the Eastshore Highway (US 40), are also off center. However, Ashby Avenue cuts through South Berkeley in getting to the tunnel and is heavily traveled, not as much with long-distance traffic as with suburban commuting traffic from the newer developments around Lafayette and Walnut Creek.

The radial streets coming north from downtown Oakland, which embrace most of Berkeley, mostly stop or peter out when they run into the foothills of North Berkeley; two are stopped sooner by the campus. These radial streets generally coincide in Berkeley with the routes of transbay trains and have left their dominant impress on the city's pattern. East-west streets, on the other hand, are generally minor and have the character of cross-town streets. Only University Avenue is comparable to the north-south streets; and this probably dates from the time of the auto-ferry and was reinforced by the completion of the Bay Bridge and the start of large-scale automobile commuting, which is presently easier if one drives west to the Eastshore Highway and follows it south to the bridge approach. The importance of Ashby Avenue dates from 1935, when the bridge and tunnel were built. Thus some reorientation

of the general pattern has occurred recently to give the east-west streets more importance. Over most of Berkeley the streets which carry the highest traffic volumes are spaced about half a mile apart in each direction; they serve conveniently to define the census tracts by which the internal differentiation of the city may be discussed.

The growth of Berkeley in what is to an extent a topographical dead end has given it freedom from many circulatory ailments. The east and west sides are virtually without openings, and much of the north side is pinched off by the convergence of the hills with the coastline. Accordingly, heavy through traffic on the highways, as on the railroads, follows the edges of the city, and the square of which San Pablo and Ashby avenues form the west and south sides has mostly only traffic of its own generation to contend with. This traffic has increased greatly during the third period of Berkeley's development, after the major lineaments of its form were set and adaptation to the potentialities of individual transportation had become difficult.

Growth of automobile traffic has increased the load on the exits at the southeast, southwest (bridge approach), and northwest corners and the south side of the city, as cars from the entire area try to pour through these constrictions. The city proper also found that it too had problems not formerly apparent. One example is the barrier the campus forms in Piedmont circulation and in fact in that of the whole city. Projecting from the east side almost to the center of the square it has become, with growth of auto traffic, a formidable obstacle to a balanced circulatory system. Its own traffic-generating powers, which have increased in the last decade as students have been unable to live within walking distance, coupled with those of the business district next to it, also have grown more serious as mass transit has deteriorated.

Differentiation within Berkeley

An obvious factor distinguishing various sections of Berkeley is the age of the houses. We find two areas having at least a quarter of their structures built before 1900. As might be expected from the information on the city's historical development, these are West Berkeley (Census Tracts 1-A and 1-B west of San Pablo Avenue, see Plate 31), and the Shattuck-Vine area, at the end of the first commuter line and spared by the 1923 fire. Significant numbers of these older houses also are found just south of the business center, another old nucleus, and at the far south end of town, where a number of the commute lines entered.

Similarly, newest houses are found in the former rural zone separating East and West Berkeley and in the outermost hill areas.

Study of curves of age vs. cumulated percentages of total number of dwelling units leads to certain general conclusions about Berkeley's settlement. The 26 census tracts in the city reached the 25 per cent-developed stage (in terms of 1940 dwellings) at dates that differed widely. West Berkeley and the Shattuck-Vine areas passed this threshold at about 1900, but the outer hills not until 1930, a spread of thirty years. However, two-thirds of the tracts passed this initial stage within eight years before and after the median date of 1911.

Dates when tracts reached the 75 per cent level varied much less than dates of initial settlement. The first areas to be filled up reached 75 per cent about 1918, the last about 1936; two-thirds attained this stage within the brief period 1922 to 1929, approximately. (This does not mean that certain areas were not occupied fairly closely before 1918, as they may have been; but conversions and apartment building since then would give a larger number of dwelling units by 1940 and thus reduce earlier percentages.)

Slopes of the curves of age vs. cumulated number of units indicate the average annual rates of growth. These varied from 2 per cent in West Berkeley with its early start to as much as 7 per cent in two areas next to Albany. Over-all, the growth rate in tracts at the peak of their activity was 3 per cent to 4 per cent. Effects of growth rate are seen in the urban landscape: areas of the city that required 15 or 20 years to fill from the 25 per cent to the 75 per cent stage were obviously subject to changes in architectural styles (if dwellings are original ones) or to conversions and apartment construction. Areas that filled up faster are more likely to be homogeneous.

On a graph of median age vs. the range of years between the 25 per cent and 75 per cent levels of occupancy, certain groupings may be seen, which form a basis for differentiation of the city:

I Old areas, growing slowly over a long time --West Berkeley, Shattuck-Vine

II Old areas that grew at moderate speed-- Lorin (Adeline and Alcatraz), Telegraph Avenue, Central Business District

III Medium age areas (1920) that grew at moderate speed--Grove to Sacramento, South of Campus

IV Medium age areas (1920) that grew rapidly --along Oakland line from Grove east

V Newer areas that grew rapidly--belt between West Berkeley and Berkeley, Claremont, Foothill Areas.

VI Newest and rapid-growth areas--North of Campus (rebuilt after 1923), Outer Hill Zone.

Another feature of areal differentiation within Berkeley is the duality of the town between eastside and west side. As has been noted, this is a function of the historic development of the two centers which grew separately, from different origins and with different ties to other Bay Region communities. The west part, once a port, is now an industrialized belt along the water; the east side, once a campus town, has taken on other functions also; intercommunication between the two has always been weaker than each one's connections to the outside world.

A striking feature of the present shape of Berkeley is the extent to which the waterfront is shunned. Most of Berkeley was settled from rail lines inland; the railroad at the water's edge served only as a barrier. Berkeley is an inland town; the waterfront, with minor exceptions, has been unused, neglected, and polluted. Opening of the Eastshore Highway has recently made citizens aware of this resource and some changes have been made slowly.

Separate centers of commercial land use exist throughout Berkeley, as they do in most cities. Two of these developed at the two sides of the

campus (the larger being a relic of the first area settled), and the others originated mostly at commute-line terminals or major stations, fairly regularly spaced through the flatter areas that were served by rail.

The central business district grew up along the first commuting rail line, where it passed the end of the campus. This happened to be directly opposite the older West Berkeley settlement and also strategically situated with respect to the north-of-campus residential areas which had no easy access to the earlier Telegraph Avenue center. Of the 200 acres of land devoted to commercial use in Berkeley, 35 acres are in the central section and this pattern dates back to the 1900-1925 period of urbanization. It is not known what effect the recent growth of population in West and South Berkeley has had on the relative importance of the several commercial centers.

The industrial section, excluding printing houses attracted by the University, is situated for the most part west of San Pablo Avenue, not because of waterfront requirements, but as an extension north along the railroad of the older factory section in West Oakland and Emeryville.

The amount of land for recreational use is small, a consequence of Berkeley's growth at a distance from the nearest city, presence of a large campus, and rather open residential density. A few small parks occupy outcrops of volcanic rock in the foothill area, places difficult to build on; small parks are located in some creek and landslide (or creeping) areas, probably for the same reason. Behind the first upthrust of the Berkeley hill block are longitudinal valleys that open north and south beyond Berkeley; they were not accessible for urban development and early became water-catchment areas. When Sierra water was brought in, they were converted in part to regional parks, which thus border Berkeley on the east. But they are still inaccessible, and serve more as metropolitan recreational centers rather than as true city parks.

Changes of elevation in the plain, even outside of the more rugged hill and foothill zones, are also influential in certain features of present occupation. For example, across the south end of town there is an increase of 30¢ or 40¢ rent per month, with each increase of elevation of one foot. To some extent this may be an effect of closer proximity to the hills, but much of it may be purely the lure of higher land, especially if reached by transit.

Although most of the plain is subdivided in a rectangular pattern, different parcels were cut up at different times, and the street patterns do not run straight through, except for the major streets every half mile. In one section the blocks may be oriented north and south, in the next, east and west. This is, of course, the result of individual development of each area; it has turned out to have certain advantages in forcing through traffic to stay on the major streets and keep out of the neighborhoods.

Development of the physically differentiated parts of Berkeley may be tied in with development of the sociologically differentiated parts discussed below, by a brief look at rent levels (1940), which reflect historic factors of both kinds. Shattuck Avenue is a general dividing

line, separating rents below the median (then $42 a month) from those above. In North Berkeley, Codornices Creek supplements Shattuck; in South Berkeley, Telegraph Avenue functions as the approximate division. Rents fell below $30 in West Berkeley, South Berkeley, and south of the business center. At the northeast and southeast corners of the city rents averaged above $60 and were highest in Claremont and Arlington tracts. Between these two corners lower rents surrounded the campus.

A system of differentiation within the city can be developed on the basis of the different populations in the city. It has been noted that by the end of Berkeley's first period of development (prior to 1925), three major groups could be identified in the city: those associated with the University, with industry, and the commuters (plus, of course, the local businesses serving these income-producing groups). Then in recent years to these three have been added: the non-white groups, the aged, and the white-collar commuters. Each of these six groups seems to have an areal expression in some section of Berkeley, and this expression has had an historical development which may be noted briefly.

The University group, of course, was here first, and the eastern part of Berkeley grew around it. As the University also grew beyond its initial limits, parts of the city itself were engulfed. The original location of the University was meant to be rural, to accommodate the emphasis on agriculture appropriate to an agricultural state; it was also meant to be within reach of the major urban center, which has long since grown out around it; it was located on a foothill site opposite the opening to the Pacific, and this factor hasn't changed.

The older commuting group, mostly professional and financial men, followed the establishment of rail lines at the upper edge of the plain and also recognized the advantages of living near the campus even though they had no direct contact. The automobile period has made it possible for this group to expand over the foothills and the lower part of the main block, and while little new growth is taking place most of this commuting group now is found in the College-Claremont section and in the foothills east of The Alameda.

The industrial group in Berkeley is found not only in the west of San Pablo Avenue area, where residences are giving way to factory utilization of the land, but in the lower part of the plain generally. These areas are close to Berkeley's factories, and also to similar employment back of the Oakland waterfront. This group, like the commuters, is rather static in Berkeley, the zone of expansion being further out, in Albany and further north.

The non-white group in 1940 occupied a rather compact area in South Berkeley, between San Pablo and Grove streets, where they made up 25 per cent to 30 per cent of the population. Why this group developed here rather than further east or west has not been investigated; there is probably a tie-in with a similar distribution in Oakland. Small portions of the area are older and in poorer condition than the city average, but by and large the quality of the residential development is equal to that of the balance of the city. Perhaps this group moved into the relatively

empty strip between West Berkeley and the University part of town.

The older people in Berkeley, who make up a greater proportion of the population than they do in most other parts of the Bay Area, are largely localized in two areas: the Telegraph-College area south of the University which is well served by transportation both to Oakland and to Berkeley's business center; and the Berryman area just north of the business center and adjacent to the Shattuck-Vine shopping district, this being an area of old houses in excellent condition, with good access to San Francisco and downtown. The campus is clearly a focal point for these people.

Less definite information is available about the white-collar commuting group--the semi-professionals, clerical, and young, single or newly-married professional or executive workers. Berkeley has many attractions to these people as a place to live, and the relatively good transit to San Francisco makes it a possible location. Many of the older commuters now drive to work and can move to the outer hills or to Lafayette, but most of these people depend upon the Key System. When they reach the family-raising stage, many of these people expect to move out where more space can be had, and so are not permanent residents of Berkeley; their return, if ever, would be far later in life.

These six groups have been discussed largely in terms of 1940 data; a brief look at 1940-1950 changes is therefore in order. These are known only in gross terms. Berkeley had an increase of about 18,000 people in this time: 4,000 went into Codornices Village, a shipyard housing project at the north end of the industrial belt; 4,000 went into West Berkeley outside of Codornices, including the outer end of Sacramento Street, mostly in new duplexes and fourplexes scattered through this area; 6,000, mostly Negroes and Orientals, came into South Berkeley around Grove Street with the greatest increase near the Oakland line; 1,000 probably clerical people in conversions and a few new apartments came into the Oakland border zone farther east; and 1,000 came into new construction in the outermost part of the hill zone. Perhaps 2,000 new population are scattered over the rest of the city, but large areas were static. It can be seen that the older growth patterns have largely disappeared and that growth is in older sections rather than on the advancing urban fringe, now far beyond Berkeley. Major concentrations of new growth are connected with Oakland's clerical workers and with industrial workers in Berkeley, or to the north or south. The campus and the commuters as sources of growth are losing their vitality as Berkeley is increasingly drawn into a pattern typical of the metropolitan inner ring.

# CHAPTER 4

## ASSUMPTIONS UNDERLYING THE INTERIM GENERAL PLAN FOR BERKELEY

The City of Berkeley occupies but a small portion of the land area of the metropolitan Bay Region; it contributes but a small share of the total economic output; and it contains but a small percentage of the population. In a very real sense, Berkeley may be regarded as a small, arbitrarily defined, political subdivision of the larger "city" which surrounds San Francisco Bay. And, in spite of the fact that Berkeley does have a very real geographic and cultural entity, its destiny is inextricably tied to that of the Bay Area.

The preparation of a plan for the future physical development of Berkeley must therefore be based upon, at best, a plan for the metropolitan region as a whole; or, in the absence of such a plan, it must be based upon a reasoned set of assumptions concerned with the physical development of the entire Bay Area in order that the development of that subdivision may be properly guided in conformity with the development of the larger area of which it is a part. The limitations here are great; for one's assumptions may reflect his wishful thinking or his poor guessing with greater precision than they reflect accurate analysis and projection of the trends of the metropolitan region. But whatever the degree of bias, it is imperative that the limitations be explicitly stated.

It is equally imperative that the assumptions with respect to the internal development of Berkeley itself be stated. Insofar as the interim plan represents a preliminary attempt to outline the future development of Berkeley, it is based upon studies which are sometimes inconclusive. Whereas more intensive studies would yield more definite answers to questions, it has been necessary in this investigation to delimit the scope of the survey, and in some cases to make specific assumptions concerning the findings which the further studies would have yielded. The limitations here are, of course, the same as those relating to the assumptions concerned with the region. The test of accuracy, in both cases, is time.

Assumptions Concerning the Bay Area:

1. The San Francisco Bay Metropolitan Region comprises and will continue to comprise a unified, highly interrelated urban complex, each geographical and political subdivision of which will contribute to the economic and social destiny of the entire area. The expanding role of the region as a world port and as a major United States gateway to the Pacific will further contribute to the growth of economic activity which has marked the Bay Area during the past decades.

2. The growth in economic activity will be contributed to by the location of increasing numbers of defense industries within the Bay Area; and the growth in economic

0
2 MILES
1/2
1 1/2
SAN RAFAEL
RICHMOND
SANTA FE
N.W.P.
ALBANY
BERKELEY
EMERYVILLE
LAFAYETTE
OAKLAND
SAN FRANCISCO
SP1
SP2
SP3
SP4
SP5
WP
BAY AREA 1950
Generalized Land Use and Circulation Patterns
COMMERCIAL AND INDUSTRIAL AREAS
RECREATION AREAS
RESIDENTIAL AREAS
MAJOR HIGHWAYS
RAILWAYS
2
SOURCE: BAY AREA PLANNING GROUP

0
2 MILES
1/2
1 1/2
SAN RAFAEL
RICHMOND
MARTINEZ
ALBANY
BERKELEY
EMERYVILLE
OAKLAND
SAN FRANCISCO
BAY AREA 1970
Assumed Land Use and Circulation Patterns
COMMERCIAL AND INDUSTRIAL AREAS
RECREATION AREAS
RESIDENTIAL AREAS
MAJOR FREEWAYS
RAILWAYS
SOURCE: BASED ON "A NEW CITY AT DANVILLE"
N INTERIM GENERAL PLAN FOR BERKELEY
GRADUATE STUDENT PROJECT

activity will be accompanied by a large increase in population, perhaps numbering 1,000,000 additional persons by 1970.

3. The shift in the focus of economic activity will continue away from San Francisco with the East Bay, and Alameda County in particular, becoming the major locus of industrial, retail, wholesale, and service-trades activity. Specifically, the City of Oakland will become the leader in all fields, with the other cities in Alameda County and with Richmond and its neighboring cities all experiencing an expansion of activity. A similar expansion of economic activity will occur in the Peninsula and the North Bay. Most industrial expansion will occur on the narrow level shelf along the Bay, on filled tidelands, and in the interior of Contra Costa County.

4. A regional planning authority will be created which will prepare a general plan for the physical development of the entire nine-Bay counties area. That plan will be in essential conformity with the major aspects of the Interim General Plan for Berkeley.

5. An area-wide, comprehensive circulation network will be erected which will include the following: (a) two additional Bay crossings, one south of the existing Bay Bridge and one connecting Richmond with Marin County; (b) an integrated system of freeways including three north-south routes, one through Marin County, San Francisco, and the Peninsula, one running along the Eastshore, and one connecting key points east of the Oakland-Berkeley Hills--a series of lateral freeways will also be erected linking the three longitudinal freeways via bridges across the Bay; (c) an integrated Bay Area-wide rapid transit system, linking the major urban centers; (d) a centrally located airport on the Eastshore tidelands, but outside of Berkeley; (e) additional ocean port facilities serving the Eastshore, but located outside of Berkeley.

6. A major portion of the Eastshore tidelands will be filled and will be developed primarily for industrial use. Ocean ports, an airport, residential developments, and recreational sites will also be developed there.

7. Residential development will continue to expand upon the surrounding hillsides overlooking the Bay; the Eastshore counties, the Peninsula counties, and Marin County will all share in this expansion. The postwar development of the lands east of the Oakland-Berkeley Hills and of the lands in the southern portions of Alameda County will continue.

<u>Assumptions Concerning Berkeley:</u>

1. The citizens of Berkeley are conscious of and will jealously guard those dominant characteristics of the city which have yielded it an international identity: the primarily residential character, the unique site, the University as a focus of activity.

2. It is the desire of the citizens that Berkeley shall not yield to metropolitan population pressures and shall avoid the characteristic overcrowding that has come to mark many cities.

3. Berkeley has become a central city in the metropolitan core as the consequence of its having developed an industrial and commercial vitality of its own and as a consequence of the urbanization of the areas surrounding it. The city will continue to occupy this position in the future in a still more intensive manner with a further influx of industrial activity. Nevertheless, Berkeley does not now and is not likely in the future to employ all who reside there nor to house all who work there. In spite of its maturation as a central city, Berkeley will continue to function as a satellite to Oakland and San Francisco with respect to employment and recreation, albeit to a lesser degree than in the past.

4. Industrial expansion in Berkeley will occur in the area west of San Pablo Avenue, in accordance with the desires of citizens and industrialists. The new firms will be of essentially the same type as presently are located in Berkeley; this means that the present high ratio of production workers per acre of land will continue to prevail. It implies that the University's staff and its library and technical facilities will continue to attract specialized industries to Berkeley.

5. The University of California will continue as the center of higher education in Northern California, will retain its present policy maintaining student enrollment at a maximum of approximately 20,000, and will increase its emphasis upon graduate and research activities. With the exception of the eastern boundary of the campus, which will be made available to the East Bay Regional Park District, the present boundaries of the campus will remain essentially fixed. However, the University will provide dormitory and recreational facilities south of the campus in the area bounded by Dwight Way, Bancroft Way, College Avenue, and Fulton Street.

6. The Berkeley Central Business District will maintain its commercial vitality in spite of the development of similar centers in the interior of Contra Costa County, in spite of the installation of a Bay Area-wide rapid transit system, and in spite of the improvement of the smaller shopping centers throughout the city. This vitality will be preserved through the provision of ample off-street parking spaces, the provision of through-traffic routes which by-pass the district, and through the coordinated redesign of the district itself.

7. Intermediate type shopping centers will be preserved essentially in their present locations on the major or the secondary thoroughfares and will be improved through the provision of ample off-street parking spaces and the coordinated redesign of the structures that comprise them. They will be supplemented by local shopping centers so as to provide shopping facilities within one-half mile of all residences, including those located in the hills. The over-all ratio of commercial floor space to the city's population will remain approximately equal to that prevailing today.

8. The age composition of the population of Berkeley in 1950 compares to the age compositions of Oakland and of the Bay Area as a whole in approximately the same ratios as those which prevailed in the period 1910-1940. These comparative groupings will not change substantially during the next few decades.

9. Berkeley's population will approximate 135,000 persons in 1970.

10. It will be possible for the East Bay Regional Parks District successfully to negotiate the purchase of Strawberry Canyon from the University of California, in order that the canyon may be annexed to the Charles Lee Tilden Regional Park and developed for recreational use. Recreational facilities will be developed in other parts of the Bay Area in such manner and to such an extent that the adequacy of the proposed recreational areas in Berkeley will not be overtaxed by non-Berkeleyan use.

11. The Bay Area rapid transit system will connect with Berkeley in the approximate location of the Central Business District. One influence of the rapid transit system will be to substantially reduce the volumes of automobile traffic during peak hours.

12. Per capita automobile registrations will continue to increase; and although automobile traffic volumes will continue to rise, the rate of increase will decline within the next 20 years.

13. San Francisco, Oakland, and Richmond will continue to be the main external points of destination of Berkeley motorists. San Francisco, Oakland, Richmond, and Berkeley will continue to be the main external points of destination of motorists living in the interior of Contra Costa County.

14. A major entrance to the Charles Lee Tilden Park will be developed outside of Berkeley. A cross-campus route connecting the Berkeley Freeway with the North Berkeley Hills can be developed east of Oxford Street.

15. A system of pedestrian paths can be developed throughout the hilly areas of the city.

16. It will be possible for the City of Berkeley successfully to negotiate with the Atchison, Topeka, and Santa Fe Railroad and with the Southern Pacific Company with the effect of consolidating the trackage of the two companies along the same right-of-way, at least in that portion of the city which is north of the line described by University Avenue.

17. The present high school site can be expanded in order adequately to serve the future population of the city.

# CHAPTER 5

## A SUMMARY OF THE INTERIM GENERAL PLAN FOR BERKELEY

"Each commission shall prepare and adopt a comprehensive, long-term general plan for the physical development of the city, county, or region, and of any land outside its boundaries which in the commission's judgement bears relation to its planning . . ."

---California Government Code[1]

The efforts of the Berkeley City Planning Commission are presently being directed toward the preparation of a general plan for Berkeley, as required by State law. As a preliminary step in a similar direction, the Interim General Plan for Berkeley, which has been prepared by a graduate student group at the University of California, attempts to explore the possibility of preparing a preliminary version of an official general plan. Of course, the interim plan which is presented here may only casually resemble the plan under preparation by the Berkeley City Planning Commission; it represents, nonetheless, a serious attempt to prepare a guide for the physical development of the City of Berkeley. Its main purpose it must be re-emphasized, is to train students for professional careers in city planning and architecture and to conduct an investigation of an idea. Its fundamental purposes with respect to Berkeley, however, are these

1. To express the students' present concepts of Berkeley's physical goals, as those goals are viewed by the students in their assumed roles as the Berkeley Department of City Planning and a consulting architectural firm.

2. To represent an example of a preliminary working instrument for decision making with respect to the various issues concerned with Berkeley's future physical development.

These purposes would apply equally as well to an interim general plan which might be prepared by the Berkeley City Planning Commission. Through the first of the above purposes, the Commission-prepared interim general plan for Berkeley could be expected to act as an important means of communication between the City Planning Commission and the other citizens of Berkeley, whereby active citizen participation in the preparation of the official general plan might be realized. And through the second-listed purpose, the City Planning Commission would have a preliminary city-wide picture of Berkeley's long-range physical goals, in the light of which more sound long- and short-run decisions might be made on the various alternatives constantly facing Berkeley.

---

[1]California Government Code, Chapter 334, Title 7, Article 7, Paragraph 65200.

City-wide Objectives of the Interim General Plan

To gain a clear picture of the many proposals embodied in this Interim General Plan for Berkeley and what they mean in terms of relationship to one another and future realization, it is necessary first of all to understand the context in which they are presented--not alone as an expression of city planning methodology, as was outlined in Chapters 1 and 2, but also as a guide to physical development tailored specifically to Berkeley. General plans could be drawn for any number of towns and cities, and yet each would be a totally different entity, with real meaning only for the particular community for which it is designed. All these general plans would, however, have some inherently common qualities by which they could be recognized. It is these common denominator characteristics of the Interim General Plan for Berkeley at which we shall look first.

1. It is generalized in form: its various proposals are indicated as locational and qualitative approximations only; in no case does it nor can it serve as a precise plan or "blueprint."

2. It is long-range in nature, in that it is concerned with recommendations for physical development as it should be a generation or so hence. However, it assigns no time period within this range to particular proposals; some might be accomplished tomorrow, but others might require many years.

3. It is comprehensive in scope. It treats all major physical elements of the city and relates them to one another. It furthermore is concerned with all portions of the area which it embraces.

4. It is a guide for physical development only. Although economic and social factors do much to shape the general plan, it should be neither an economic nor a social plan except as economic and/or social factors might be reflected by proposals for physical developments.

5. It implies an evolutionary process in the translation of its embodied proposals from plan to reality. Just as cities alter themselves only imperceptibly over periods of time, so the general plan must be realized through slow, gradual change from existing physical conditions.

6. It provides a logical and defensible basis for legal tools of effectuation by which the proposals of the plan are carried out.

These qualities are basic. They apply to the general plans in general, whether the plan be interim in character or official, whether it apply to Berkeley or to another city. Without any one of these characteristics a general plan cannot properly fulfill its function.

Each individual case of a general plan will unquestionably call for a representation of goals, both specific and general in type. The specific objectives will portray the custom-tailoring job which is necessary, identifying the plan with one and only one area. The general objectives will be largely uniform among general plans. It is appropriate here, then, to list both the various

general and specific objectives of the Interim General Plan for Berkeley.

General Objectives

1. The Interim General Plan for Berkeley is designed to encourage the orderly and healthy development of each of the several kinds of uses of the land in the city through appropriate functional separation of land uses and reduction of disharmonious land use relationships.

2. It outlines a framework for regionally integrated, city-wide circulation--systems of motorways, rail lines, and rapid transit, coordinated each with the others and with present and desirable future uses of the land.

3. It seeks to create in its proposed land use and circulation patterns an environment in which the maximum opportunity exists for every individual to enjoy a fuller life.

Specific Objectives

1. The Interim General Plan for Berkeley emphasizes Berkeley's function as a center of higher education in the Bay Area. It is geared to effect a close physical, social, and economic integration of the city and the University of California. Berkeley and the University are inextricable from one another, and the desirability of beneficial influences of each upon the other is open to little question.

2. It is designed to preserve the over-all low density residential character for which Berkeley is rightly famed, while at the same time allowing for a wide range of residential dwelling types and densities.

3. It calls for a circulation system which maximizes for every Berkeleyan freedom of movement, choice of place of employment, and modes of travel.

4. It seeks to assure full development of commercial and industrial activities in Berkeley to an extent appropriate to the role which Berkeley will play in the metropolitan Bay Region.

5. It outlines the essential elements of public services which must be provided to satisfy Berkeleyans' needs for governmental administrative functions and for educational and cultural facilities.

6. It proposes exploitation of Berkeley's potentialities for the development and preservation of natural and other areas for public park and recreation use.

7. It is intended to suggest a justifiable program for the reclamation of Berkeley's waterfront tidelands as a usable area devoted to industrial, residential, and regional recreational uses.

8. It proposes the preservation and enhancement of the visual, architectural, and aesthetic qualities of Berkeley's setting to a degree consistent with optimum land use and necessary circulation facilities.

9. The Interim General Plan for Berkeley proposes to achieve, through proper design and arrangement of physical elements of the city, a strong sense of unity within Berkeley. By unity is implied both identification with the city and its people and full opportunity to all individuals for social and economic contacts.

City-wide Principles of the Plan

Principles derive from objectives, especially in the sense that they indicate the general manner in which the objectives are to be pursued. But to enumerate here even the broadest of principles which stem from the above objectives and apply to the Interim General Plan for Berkeley would be less appropriate than to consider these principles in detail where they apply specifically. The reader is therefore referred to the various subsections of Chapter 6, wherein principles incorporated in the component elements of the Interim General Plan for Berkeley are treated.

* * * *

The Proposals of the Plan

Many functional and aesthetic considerations underlie the numerous proposals embodied in this Interim General Plan for Berkeley; they follow from the general and specific objectives set forth above. The introductory description of the plan which follows is an endeavor to explain the way in which the plan consummates these objectives. All proposals, plus descriptions of existing conditions, influencing factors, and reasons for changes, are discussed at length in Chapter 6. Here, however, the reader will find a general description of the Interim General Plan for Berkeley, on a city-wide basis. It is presented in the order in which the specific objectives of the plan have been outlined.

The University of California

The University will unquestionably remain the largest single entity within the City of Berkeley, possessing a quality of identification with Berkeley as the major educational center in Northern California. Its many intimate and diverse contacts with Berkeley will be intensified with the passage of time, so that a recognition of the synonymity of "Berkeley" and "The University of California" becomes imperative. Students, faculty, research workers, technicians, administrative employees--in fact all directly or indirectly associated with the University--lend in the aggregate elements of quality to Berkeley, whether these individuals live in Berkeley or not. Students spend several years in Berkeley, on the average; the majority of academic and administrative employees maintain homes in Berkeley. It is not inappropriate, therefore, to give recognition to the importance of the University in this Interim General Plan.

As the plan envisions the city some years in the future, the University will have undergone a slight shift in location and a moderate change in size. It will have moved westward, in general, making room in the Strawberry Canyon area for an extension of the East Bay Regional Park System into Berkeley. In addition, it is anticipated that the southern campus limits will have extended, in portions, to Dwight Way, allowing for development of new areas for student housing and related functions. In its new change of location, its western boundary will remain adjacent to the Berkeley Central Business District. For purposes

of the plan, it has been assumed (1) that the University will have in the vicinity of twenty thousand students in attendance at Berkeley, and (2) that its educational functions will have shifted largely to upper division, graduate, and research levels. These two factors, as assumptions, point to these changes of the campus limits. Other determinants, among which is the desirability of greater physical integration with the city, suggest the desirability of the proposed locational shift.

Berkeley's focal core will be in part made up of the University. The other sub-foci will be the Central Business District and the Civic Center. The three portions together form an expression of a high degree of integration of business, government, higher educational, and cultural activities; the three areas will make up the focal trio which in large measure will symbolize Berkeley.

Residential Areas

Berkeley has long been noted for its geniality as a residential city as well. Its hillsides glitter with homes, the pattern of which climbs to the very top of the hill block. In very few places, even today, does one find really serious overcrowding of residential development. It is a major purpose of the plan to preserve the low density patterns in the city in order that Berkeley may avoid the overcrowding that tends to develop as a suburban city grows to become a central city in an urban metropolis. The plan therefore proposes that a ceiling be established upon population growth within Berkeley; it establishes a holding capacity of some 150,000 persons to be accommodated throughout the city in accordance with a planned pattern of population densities. In the level areas of the city, as well as in the hills, there are large areas of relatively low density development in well maintained structures; and the plan proposes to protect this low intensity of use. In other portions of the city, substantial areas of high densities are proposed. In this way the city shall be able to assume its role as a central city in the metropolis while at the same time maintain its traditional role as a city of family homes. Thus, concentrated adjacent to the University and the Central Business District, the plan recommends that as many as 125 persons may live on an average net residential acre, in contrast to the maximum of 30 persons per acre permitted in the very lowest density classification, located largely in the north and northwest parts of Berkeley and in the extreme southeast. Two intermediate density ranges are indicated in remaining portions of the city. To the south, southwest, and west of the Central Business District will be found the low-medium residential densities, designed to accommodate up to 50 persons on each acre of residentially used land; along the major arteries and surrounding important but subsidiary commercial nuclei will be the high-medium classifications, allowing for up to 80 persons per net residential acre. The plan does not indicate specific dwelling types but only maximum density limitations in the various areas, as a means of utilizing each part of the residential land in Berkeley for the numbers of persons for which it is best suited, both in relation to non-residential functions and in relation to standards which assure adequate sun, light, and air to every home in the city. Within each classification the range of allowable dwelling types is large; in the city as a whole, embracing all the density categories up to 125 persons per net residential acre, possibilities for diversification of kinds

of structure will be as great, if not greater, than the city-wide range found today. The general intent of the Interim General Plan with respect to density indications is, of course, to provide within the residential areas of the city the essential basis of order, without which a truly functional and beneficial living environment cannot be achieved.

Circulation Media

Berkeleyans a generation from now will face the need for getting about just as citizens today do. The Interim General Plan for Berkeley, therefore, represents intensive study of the needs of Berkeleyans in the future for adequate systems of motorways, rapid and surface transit, and other forms of transportation. What is indicated in the plan are the primary elements of the various circulation media which will be necessary and appropriate.

Motorways. Vehicular movement between Berkeley and other areas in the Bay Region will be handled primarily by three main limited-access routes or freeways. Two of these will be aligned north-south: (a) the Grove Street Freeway, with accessory surface connections to the Berkeley Central Business District and extending from Ashby Avenue southward to provide access to and from Oakland and San Francisco; and (b) the Eastshore Freeway, connecting the cities of the East Bay and following the present shoreline of Berkeley. The third freeway will extend perpendicular to the Grove Street and Eastshore Freeways, oriented east-west and connecting them near the southern city limit of Berkeley; it will extend eastward and will provice facilities for high-speed vehicular movements between Berkeley and the areas of Contra Costa County beyond the Berkeley Hills. Adjunctive to these principal vehicular routes, and serving for the most part intra-city traffic, will be a pattern of surface arteries, which, in the order of their importance, consist of expressways, major and secondary thoroughfares, and local streets. In general, each lower classification of thoroughfares will act as a collector or feeder to the next highest order; both short- and long-distance movements of vehicles will be efficiently channelized and directed so that each trip in Berkeley by auto, taxi, bus, or truck can be made as easily as possible.

Transit. The backbone of the system of mass transport in Berkeley will be a north-south grade-separated rapid transit route, which will comprise but one portion of an integrated, Bay Area-wide pattern of rapid transit. This route will be located approximately along the line of the present "F" interurban train, connecting Berkeley with Oakland and San Francisco to the south and southwest. Northwestward and north it will extend to Albany, El Cerrito, and Richmond. Coordinated with this rapid transit line will be a network of express, trunk line, and feeder transit routes, utilizing surface vehicles on principal thoroughfares and tapping all areas of Berkeley. Only through such development in mass transport facilities can the solution of Berkeley's present circulation congestion problems be properly approached; adequate transit--swift, safe, comfortable, convenient, and economical--will have the effect of increasing mobility among the population, while tending simultaneously to relieve the burdens of congested areas, of central parking deficiencies, and of excessive individual transportation costs.

Railways. Main line rail service in Berkeley will, according to the Interim General Plan, be provided by the Southern Pacific Company and by the Atchison, Topeka, and Santa Fe Railway over joint trackage located on Third Street in the western part of Berkeley. The existing Santa Fe route through west-central Berkeley will have been removed to the new location. The new joint route will handle all passenger traffic through Berkeley. Although the plan does not call for a passenger terminal in the city, transit services and motorways of the character described will offer vastly improved access between Berkeley and existing and proposed main-line passenger terminals in neighboring Oakland and Richmond--more than compensating for what would otherwise be a deficiency. Freight services and spur trackage will adequately provide for the needs of Berkeley's industrial and warehouse districts, through which the rail line passes.

Parking. Within a generation Berkeley will in all probability experience an increase in per capita automobile registration, despite the deterring influences which attractive mass transport facilities would have on such a trend. Increased use of the private automobile is in part a reflection of a rising standard of living; the automobile is regarded as an essential adjunct to urban living in increasing measure. In larger part, however, the rise in private automobile use has come about through neglect of corresponding technological developments in mass transport. But the fact remains that the Interim General Plan for Berkeley must concern itself with the provision of off-street parking facilities (terminals) for private vehicles, as well as with the provision of adequate transit. Although the plan itself does not indicate specific areas to be devoted to parking use, it should be pointed out that various areas which might be classified as "traffic generators"--business and industrial areas and centers of educational, cultural, or government activity--should all have sufficient off-street parking areas to alleviate congestion of streets caused by a deficiency of such off-street space.

Air and water transport. Terminal facilities for these modes of passenger and goods transport will be located outside Berkeley itself, in other parts of the Bay Area, but the regionally coordinated systems of transit, motorways, and rail lines, mentioned above, will enable Berkeley to be served adequately.

Commercial Areas

Dominant among Berkeley's commercial centers will be the Central Business District, extending from Heart Avenue on the north to Dwight Way on the south, and from Oxford Street to Milvia Street on the east and west, respectively. It adjoins the University to the east and the Berkeley Civic Center and the Berkeley High School on the west. The Central Business District will be subdivided into three distinct functional areas: (a) the central shopping quarter, wherein the primary retail-commercial activities are to be focussed; (b) a professional-office quarter to the north of University Avenue; and (c) a quarter devoted to numerous central-service activities (such as auto sales, printing establishments, and similar functions), occupying the remainder of the Central Business District south of Bancroft Way.

Other commercial areas in Berkeley will consist predominantly of two broad kinds: (a) the intermediate type, containing a considerable variety

of commercial and service activities, though not comparable to the range of facilities available in the Central Business District; and (b) the local shopping center, more numerous than the intermediate shopping centers, providing for the everyday shopping needs of Berkeleyans and sufficient in number to cover the entire city with walking-distance service-radii of 1/4 to 1/2 mile. The ribbon commercial developments so prevalent on major arteries in Berkeley today may in some cases be absent; it is coming to be widely thought that commercial areas of all types serve people better and operate more efficiently themselves when each is concentrated in a well defined area rather than strung out with little or no definition along a street. The Interim General Plan for Berkeley has indicated the relative scales and the locations of the Central Business District and of the subsidiary shopping centers in Berkeley, although no detailed recommendations can be made at this time regarding their specific sizes or regarding their shapes.

Industrial Areas

Berkeley within the past two decades has demonstrated an increased industrial development which has occurred largely in the area to the west of San Pablo Avenue. The Interim General Plan proposes a broad band of industry in West Berkeley, across the city from north to south on either side of the railway right-of-way. Its limits are defined so as (a) to accommodate adequately all future desirable industrial activities which are likely to locate in Berkeley within the next generation; (b) to indicate a buffer-line of demarcation between the industrial area of the city and adjoining living areas in order that the two adjacent uses of the land will not conflict; and (c) to encourage the necessary functional separation of the types of traffic which are generated by industrial establishments within the defined area and by adjoining residential areas. The Interim General Plan further indicates two general classifications of industry types--those of more-restricted and less-restricted nature--and defines the extent of each classification within the industrial area, related to degree of obnoxiousness, need for rail access, and harmonious relationship to nearby non-industrial land uses.

But the proposed industrial area does not exclude residential development from the area west of San Pablo Avenue. To the contrary, industrially used lands will be limited to the area west of Sixth Street between Dwight Way and Camelia Street and to the section west of Eighth Street north of Camelia Street. Residential development of considerable quality already predominates in the remaining portions west of San Pablo Avenue (specifically, bounded by Dwight Way, Sixth Street, and Camelia Street on the south, west, and north, respectively). The Interim General Plan proposes that it be preserved in residential use.

Public Service Facilities

The Interim General Plan for Berkeley indicates many of the public service facilities which must be incorporated into the structure of Berkeley a generation from now.

Public Schools. Of major importance among public services will be the public school system, which will be necessary to provide education for Berkeley's youth from kindergarten through high school. Primary, elementary, junior high, and high school plants are shown in the plan. Their locations reflect in large part the existing distribution

of these facilities, with several new schools anticipated in the primary-elementary range. With an increased population in prospect, and especially in view of the large numbers of very young children today, it becomes apparent in addition that many existing school plants will have to be expanded; and within a dozen years or so the present facilities of Berkeley High School will become inadequate. Two alternatives must be faced, with respect to the high school: (a) its physical plant will have to be expanded; or (b) the provision of a second high school--a problem involving many social complications--will be necessary. The Interim General Plan does not specifically propose a second high school; its location, if necessary, will rest on future decisions which must be made in light of more information than is available today. In general, however, the distribution of school facilities will be closely coordinated with patterns of residential land use and densities, with patterns of population age groups, and with locations of park and recreational areas.

Civic Center. West of the Central Business District will be the Berkeley Civic Center, embracing most city government activities and city-wide cultural institutions. It will be expanded to lie between University Avenue on the north, Allston Way on the south, and Milvia Street on the east; it will extend to the west of Grove Street. The City Hall, the Hall of Justice, the Central Post Office, the Veterans' Memorial Building, the Farm Credit Building, and the Community Theater will be located in this area, along with other new governmental, cultural, and semi-public activities. It is assumed that the present Berkeley High School Community Theater will continue to serve its double function as a high school auditorium and as a place of assembly for city-wide use.

Community Center. Coordinated with the public schools and with park and recreation facilities will be a system of community centers, providing opportunities for social and leisure-time activities at a sub-city-wide level. Such facilities are an integral part of city life, providing an outlet for neighborhood club and citizen group meetings, group handicrafts and hobbies, and similar functions. The Interim General Plan for Berkeley proposes that these centers be provided in conjunction with the junior high and certain elementary schools, in order that, through proper distribution of these services, the maximum probability of healthy social contacts may exist.

Libraries. Berkeley today has an excellent library system, consisting of a central library and four branches. The Interim General Plan assumes the retention of these facilities and, if possible, an expansion, in order that the splendid collections of the Library Department be made accessible to even more Berkeleyans.

Fire and Police Protection. Public safety provisions must, of course, be made in any city. Berkeley already has an advantage over many other cities by virtue of the high quality which it now possesses in fire and police protection services. Within the outline of the Interim General Plan for Berkeley these services will be provided in at least the same degree to which they are present today.

Recreation Areas. With respect to parks and recreation areas Berkeley today is deficient, in spite of the many assets of its physical site. The Interim General Plan for Berkeley proposes
of appropriately designed and
located park and recreation facilities which

(a) take advantage of the potentialities of natural sites for public leisure use and (b) satisfy park and recreation requirements in relation to the population composition and distribution in the future.

The North Berkeley Hills area is at present the only part of Berkeley which approaches the satisfaction of citizen park and recreation needs. It is the remaining parts of the city, then, to which special attention has been given in the plan for purposes of improving the distribution of these facilities throughout the city. On the lowest level of the scale, but implied rather than shown directly in the Interim General Plan, will be the neighborhood level tot-lots and small, passive-recreation areas. These will be distributed in large number throughout the residential areas of Berkeley, providing ample and safe open space for very young children and for older citizens, and serving areas of under 1/4 mile radius. Playgrounds, playfields, and community center facilities, such as those of the Grove Street Community Center and San Pablo Park, will be provided as well, serving larger areas of the city and catering to leisure needs of older children and young adults. At the upper end of the scale are park and recreation facilities of city-wide and regional nature: the extension of the East Bay Regional Park System into Strawberry Canyon east of the University, preserving and developing this scenic area for public use, and the acquisition of continuous park belts along Codornices and El Cerrito Creeks, providing full utilization of these natural features of the land for public park and recreation areas and connecting already existing park developments. In addition, and not subject to this type of classification because of their very special nature, the incorporation of special areas in various parts of the hills above Berkeley --scenic drives and viewpoints--is called for in the plan, in order to make available to all Berkeleyans increased opportunities for enjoying the visual and aesthetic qualities of the city as a whole and of the Bay Area as seen from the Berkeley Hills.

Berkeley owes its citizens not only the opportunities for leisure activities just described. The city has today an unexploited waterfront and tidelands area which, if reclaimed and developed, could become without question one of the most magnificent spots in the entire Bay Region. The Interim General Plan suggests, but does not specifically propose, a scheme whereby these lands can be put to use for a combination of residential, industrial, and regional recreational purposes. It is the last of these types of uses here mentioned which offers Berkeley the distinction of becoming a Bay Area focus for activities related to regional recreation--University sports stadiums, swimming, yachting, crew racing, riding, semi-commercial recreation, and picnic sites.

Aesthetic Qualities

Berkeley is characterized today by distinct visual qualities which are indeed worthy of retention and cultivation. Unquestionably, Berkeley is different; and its people are, by and large, unusually aware of Berkeley's unique position among cities. The hills, the view, the varied residential architecture, the University, the Golden Gate directly across the Bay do much to typify Berkeley; and to assure the preservation of all these characteristics, the plan has as one of its clear objectives the optimum exploitation of these qualities for the betterment of the city in the future.

The Interim General Plan proposes many features which combine to make possible this desirable retention of "character." The park belts, the view areas, the low-density sections of the hills, Strawberry Canyon's development as a part of the East Bay Regional Park System, the various scenic drives in the hills and on their crest, and the over-all "composition" of Berkeley as seen from within and without, are all essentially aesthetic elements, the realization of which will materially contribute to the beauty of Berkeley.

* * * *

In summation, the Interim General Plan for Berkeley proposes general but defined schemes of land use and circulation, which have been influenced by careful consideration of the various aesthetic qualities. The plan is designed to create a functionally and aesthetically conceived pattern, within which all individuals and groups may have the fullest opportunities for self-expression and development.

# CHAPTER 6

## THE COMPONENTS OF THE CITY AND THE ELEMENTS OF THE PLAN

### A. INTRODUCTION

Berkeley has a unique history among the cities of California. Having been selected as the site of the College of California, the predecessor of the University, its earliest urban development was associated with the academic institution, its earliest inhabitants were academic persons, and its earliest focus of activity was in the area adjacent to the site of the University. With the development of West Berkeley near the Bay shore, two distinct hamlets came into being; and although there was a considerable amount of competition between the two, in 1878 they were incorporated as a single town, having a joint population of only 2,000 persons. The new government became a cooperative enterprise among the citizens of both villages, and the leadership was largely delegated to men of learning who were associated with the University.

During its earliest days its leaders were University people who are described by Berkeley's historians as being men of high civic responsibility with an inspired appreciation of the magnificence of the site which the city occupied. Believing that the University and the city were one, they and the townspeople participated at all levels of civic affairs. And, because they also believed that the city had a great future as the cultural center of the state, they carefully nurtured all aspects of the town's development.

This active participation by University professors in civic affairs apparently did not continue through the years. The responsibility for the management of the city's business was almost wholly assumed by Berkeley's non-University citizens, who from time to time manifested an active interest in the planning for its physical development and for the protection of its natural beauty.

The citizens' exceptional interest in the aesthetic characteristics of the city resulted in the establishment of the Civic Art Commission in 1915. To the Commission was delegated the responsibility of "providing for the future growth, development, and beautification of the City of Berkeley." It was "to provide plans consistent with the future growth and development of the City of Berkeley for securing the City and its inhabitants sanitation, service of all public utilities, and harbor, shipping, and transportation facilities." As one of its first acts, in 1915 the Art Commission sponsored the "Report on a City Plan for the Municipalities of Oakland and Berkeley," prepared by the eminent city planner, Dr. Werner Hegemann.

In 1916 the first Districting Ordinance of the City of Berkeley was adopted. It and the 1920 revisions were the effective zoning bases of the city until the comprehensive zoning ordinance of 1949 was adopted.

The Art Commission was succeeded by the first City Planning Commission in 1925. During the succeeding 18 years little formal planning work was accomplished; however, dating from 1943 a series of plans concerned with various of the city's components were prepared by city planning consultants. In 1949 a full-time city planner and a permanent staff were employed to continue the studies which had already been initiated and to prepare a plan for the city's growth.

Thus, during its entire history--from the date of the incorporation of the association for the development of its lands in 1864 to the present--the physical development of the city has been sporadically subjected to study by its citizens and by specialists. This community interest plus a fortuitous combination of circumstances related to Berkeley's role as a college town, as a suburban community, and as a small manufacturing center and related to the unique characteristics of the terrain, have resulted in an urban development which manifests relatively few of the land use and circulation problems which characterize most cities. The residential densities throughout most of the level areas of the city as well as those in the hilly areas are low, the type of residential structures which have been built having been carefully controlled through early zoning. The combined forces of natural housing demand and residential zoning have largely restricted the development of high density development to the area surrounding the University and the Central Business District, just as a formal city plan might have proposed it. The largest part of the industrial development has occurred along the Southern Pacific railroad lines west of San Pablo Avenue, the resulting effect being that the city presently has a highly desirable, unified, and largely isolated industrial district which is immediately adjacent to the major highway and rail facilities. The city's commercial outlets are scattered along the major thoroughfares, and in spite of the fact that the patterns are not ideally suited to automobile use, each of these strips has developed an active nucleus at the juncture of two major thoroughfares, where they are best located for easy access to the shopper who travels by automobile. A system of north-south major thoroughfares has been developed which facilitates access to the other major cities located along the East Bayshore and to the rest of the region. A supplementary system of east-west major streets has also been developed which ties the present city into a unified community. The school system has long been distinguished by its high standards of performance.

But if the residential, commercial, and industrial land use patterns and the thoroughfare patterns have been desirably developed, the city has nevertheless neglected other aspects of its physical development. Berkeley has a deficiency of recreational space, in spite of the fact that as early as 1897 a continuing attempt was made to provide adequate amounts of public open places. The deficiency is probably in large part a reflection of the many natural advantages of the site; for until the city became intensively developed, there were ample amounts of attractive areas which were available for both active and passive recreational use. Now that the city is developed, however, the problem of acquiring recreational sites has become a serious one. The major unexploited area of the city remains submerged by the waters of the Bay, and toward the development of those lands, Berkeley

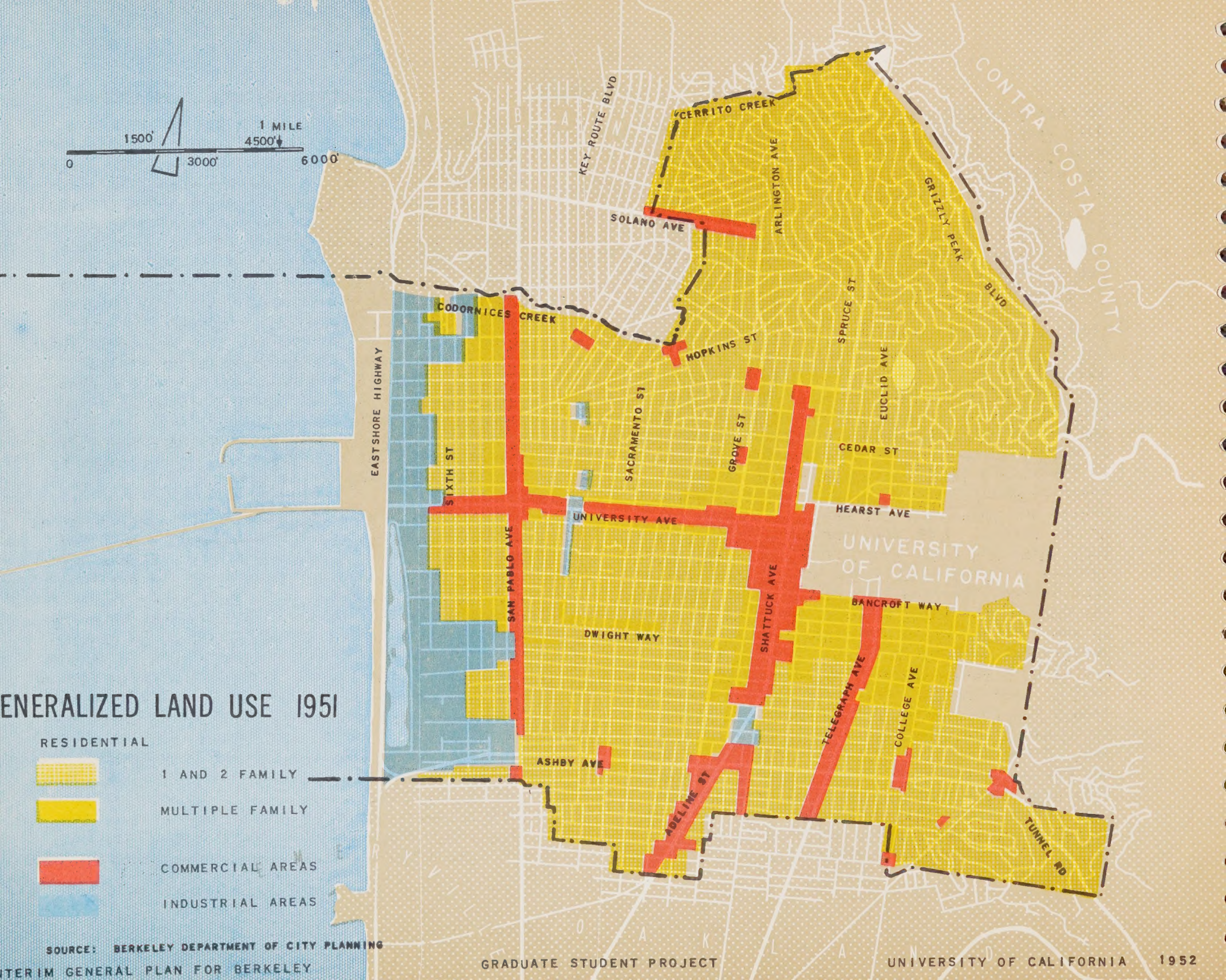
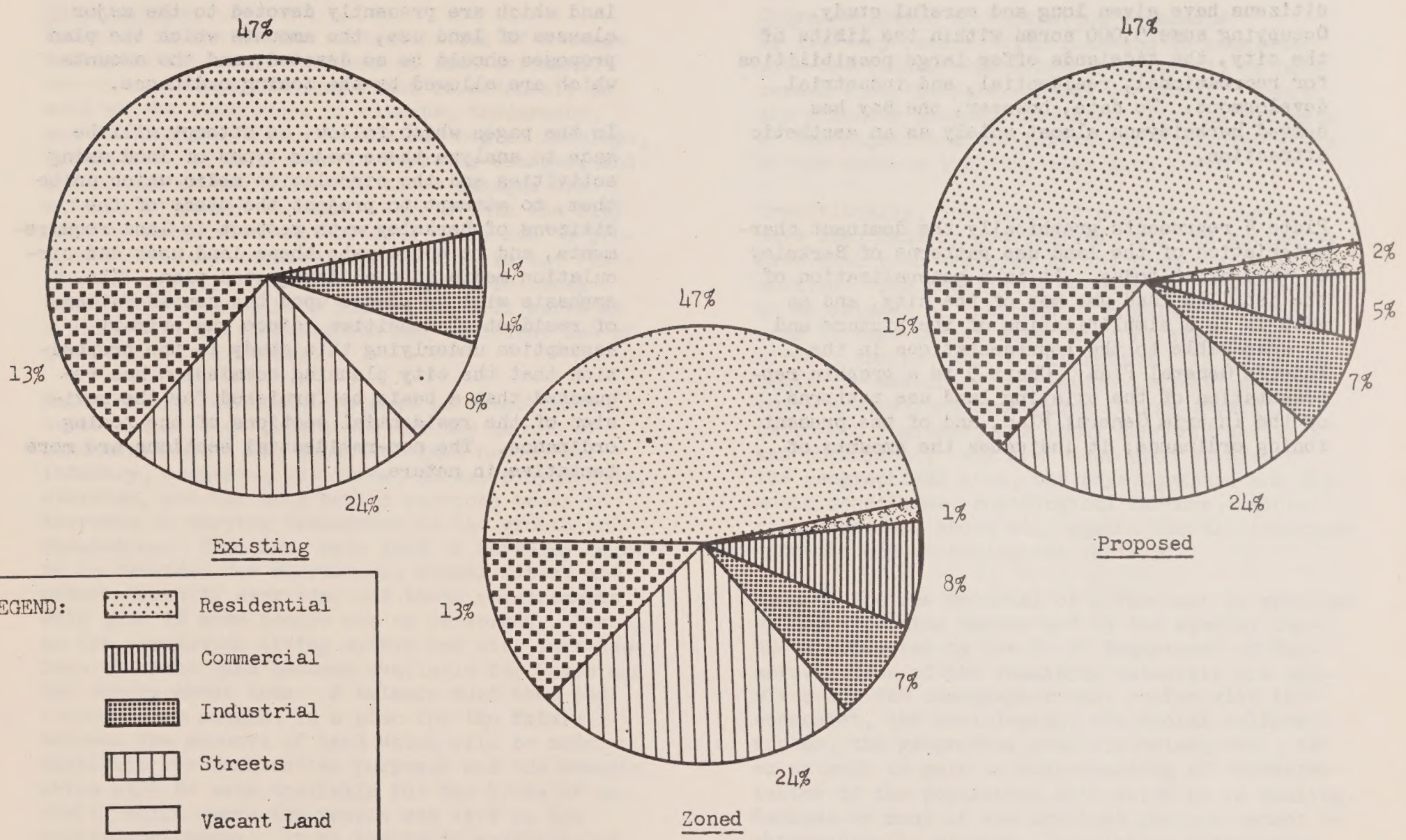

1 MILE
1500'
4500'
0
3000'
6000'
KEY ROUTE BLVD
CERRITO CREEK
SOLANO AVE
ARLINGTON AVE
GRIZZLY PEAK BLVD
CONTRA COSTA COUNTY
CODORNICES CREEK
HOPKINS ST
SPRUCE ST
EUCLID AVE
EASTSHORE HIGHWAY
SIXTH ST
SACRAMENTO ST
GROVE ST
CEDAR ST
HEARST AVE
UNIVERSITY AVE
SAN PABLO AVE
UNIVERSITY OF CALIFORNIA
SHATTUCK AVE
BANCROFT WAY
DWIGHT WAY
TELEGRAPH AVE
COLLEGE AVE
ASHBY AVE
ADELINE ST
TUNNEL RD
ENERALIZED LAND USE 1951
RESIDENTIAL
1 AND 2 FAMILY
MULTIPLE FAMILY
COMMERCIAL AREAS
INDUSTRIAL AREAS
SOURCE: BERKELEY DEPARTMENT OF CITY PLANNING
NTERIM GENERAL PLAN FOR BERKELEY
GRADUATE STUDENT PROJECT
UNIVERSITY OF CALIFORNIA
1952

Chart 5

ACREAGES IN MAJOR LAND USES, ZONING DISTRICTS, AND PROPOSED LAND USE, AS PERCENTAGES OF TOTAL CITY ACREAGE




SOURCES: Berkeley Department of City Planning
Berkeley Zoning Ordinance

citizens have given long and careful study. Occupying some 5,000 acres within the limits of the city, the tidelands offer large possibilities for recreational, residential, and industrial development. To date, however, the Bay has served Berkeleyans almost solely as an aesthetic attraction.

Plate 4 represents graphically the dominant characteristics of the land use patterns of Berkeley as they exist today. It is a generalization of the detailed land use map of the city, and as such it is a simplification of the picture and is comparable to the representations in the Interim General Plan. Chart 5 is a graphic representation of the existing land use patterns, of the Interim General Plan, and of the present zoning ordinance; it indicates the amounts of land which are presently devoted to the major classes of land use, the amounts which the plan proposes should be so devoted, and the amounts which are allowed by the zoning ordinance.

In the pages which follow, an attempt will be made to analyze these major types of land using activities and the circulation media which unite them, to attempt to project the needs of the citizens of Berkeley with respect to land requirements, and to coordinate these land uses and circulation media into an integrated plan. The emphasis will be placed upon the considerations of residential densities, since the primary assumption underlying this study is the proposition that the city planning commission has requested that a basis be furnished for the revision of the residential sections of the zoning ordinance. The non-residential sections are more tentative in nature.

## B. POPULATION FORECASTING AND THE GENERAL PLAN

### Introduction

Berkeley is one of the central cities of a large metropolitan area. The uses of land throughout the city reflect this important relationship as well as the influences of climate, topography, and the limited area. As the Bay Region develops, the pattern of land uses in Berkeley changes; and the character and extent of these changes are matters of public concern. Land within the city must be budgeted to fit present needs and to provide for future requirements; and it is the function of the physical planning agency in local government to prepare a plan which will serve as a guide for the conservation and efficient use of this valuable resource.

Satisfactory relationships must be established between the total population and the amount of land available. The amount of land needed for industry, commerce, utilities, parks, playgrounds, churches, and the many public services tends to increase in varying proportion to the growth in population. Even now, more land in Berkeley ought to be provided for recreation, school sites, and other community services; and these requirements will grow if more people are to be served. Hence, as the population living within the city increases, less and less land becomes available for homes and the spaces about them. A balance must thus continuously be sought, in a plan for the future, between the amounts of land which will be made available for residential purposes and the amounts which will be made available for the kinds of activity which serve the people who live in the residential areas. It is the basic postulate of city planning that such a balance can be defined.

### Characteristics of Population Forecasts

By its very nature, city planning is concerned with the future. More specifically, it is concerned with the future needs of people. Hence any planning program must start with an estimate of the number and the particular characteristics of the persons that the plan must serve.

Traditionally, forecasts of population numbers have been made by specialists, and the estimates have then been employed by the planners in their studies. The population projection consists of an adjustment of the present population of an area to some target date, with reference to births, deaths, and net migration. In addition, logically developed population projections involve assumptions concerning future levels of national, regional, and local economic activity and employment; they are based upon studies of the geographical area, the physiographic and climatic conditions, sociological factors, natural resources, and above all, again, the all-important economic and technological factors.

Much of the raw material of a forecast is supplied by the decennial census and by the special censuses conducted by the U. S. Department of Commerce. Some of the remaining materials are elusive; and the demographer must confer with the economist, the sociologist, the social welfare worker, the geographer, the historian, etc., in an attempt to gain an understanding of characteristics of the population with which he is dealing. Because so many of the critical factors cannot be mathematically equated, "population forecasting is essentially a matter of judgement in selecting

the kind of forecast to present, in determining the procedures to use, and in appraising the effects of the factors that induce population changes. Obviously this should be an informed judgement, backed up by the most complete and thorough analysis of the particular problem that the forecaster is able to make. . . . The crux of the solution lies in the thoroughness with which the probable effects of the factors affecting population growth or decline in the particular area are evaluated, and the skill with which the evaluations are translated into numerical figures.[1]

The many differences among the various forecasts which have been prepared in the past need not be discussed in detail here. It is sufficient to note that, although some are over-simplified mathematical projections and some are thorough-going analyses, traditionally the projections assume that growth of population is solely a function of natural forces. It is assumed that, should economic, sociological, geographic, technological, and demographic factors favor a very large increase in population, the increased population would ensue, and that cities would continue to absorb as many additional persons as the natural forces dictate. Few, if any, consider the new variable made possible by contemporary city planning: a planned, optimum population size. With the addition of this factor, population predictions must take into account the population policy of city government.

---

[1]V. B. Stanbery, Better Population Forecasts for Areas and Communities, pp. 4-5 (unpublished manuscript).

Population Control as a Function of Public Policy

The typical pattern in California communities in past decades has been one of ever increasing population growth. Most of the new growth has been absorbed in the cities. Although the rate of growth is presently declining in some cities (because the total population base is increasingly larger), it is safe to assume that more and more persons will migrate to California in the years ahead; and the net effect of in- and out-migration and of birth- and death-ratios will be to add still further to the California population count. It is the thesis of this discussion that this increase does not necessarily mean that the individual community in California, such as Berkeley, must also accommodate an ever increasing number of inhabitants.

The City of Berkeley is an especially fitting case study for an investigation of the proposition that population growth can be controlled, since its land area is fixed, the number of vacant lots are few, and the only potential new subdivisions lie in the area presently submerged by the Bay. Berkeley is a built-up city; any increase in population must mean an increase in population densities. That is, any appreciable increase in Berkeley's population can be accommodated only by crowding the new inhabitants into areas which are already inhabited by Berkeleyans.

It has been said that one of the marks of contemporary civilization is the bending of nature to the will of man. In the past it was thought that population growth was a manifestation of the will of God. In the more advanced cultures the growth of numbers is in ever increasing degree at the discretion of those who are of reproductive age.

Thus, moderation has enabled our society to attain a rather high average standard of living.

It is proposed here that another form of discretion be practiced by society, not as individuals but by all members of the community in concert: that the planner and the citizen, according to their best knowledge, determine and establish an optimum city population--a form of planned cityhood, as it were--in order that they may thereby establish and maintain that physical environment which they deem to be most conducive to the attainment of better living. It is toward this goal that this study proposes a population holding capacity for the City of Berkeley, based upon a density pattern which is designed according to the best standards commensurate with existing land use patterns and which is designed for a period of time which looks as far into the future as can reasonably be conceived. This type of density plan can become the contemporary city's insurance against the uncontrolled increase of population densities which is already threatening the health of California's cities and of their citizens.

High densities in residence areas, unless coupled with great improvements in building and open space designs, will tend to produce areas of blight, and thus retard further growth. It follows, therefore, that the capacity of the city for increased population is limited by the space requirements deemed to be adequate. Berkeley can develop and prosper only by making the best possible use of its exceptional but limited land area. Adequate space must be provided in the right places for every business activity and for every need of the home. This, rather than mere growth in numbers, is the objective of the city government's policy, as expressed in its general plan. The real problem in developing the plan is to determine the optimum number of people that the city can comfortably house, without so reducing living space as to drive out those whose work requires daily movement to the centers of business or industry. With such an optimum successfully established, the emphasis could then be placed upon constructive measures for increasing the attractiveness and stability of neighborhoods, the elimination of sub-standard development, and the improvement of interurban transportation facilities. Improvements in regional transportation, as a critical example, would make the city's cultural business and industrial facilities more accessible to the population of the surrounding area.

The decision to be made in designing a density plan, therefore, is whether to aim at a somewhat greater population than presently exists, with full understanding of the effect upon the higher average residential density, or to aim at a lower average density without loss of population by encouraging the full use of areas now improperly developed. In either case, emphasis would be placed upon the securing of better arrangement of land uses, and a more even distribution of population through the establishment of more careful building and zoning regulations, including provisions for control of density in terms of dwelling area per acre and percentage of land coverage. In either case the most congested areas would need to be redesigned in accordance with modern methods and standards. In so doing the densities of certain close-in areas might be even higher than at present but with far better living conditions because of improvements in the plans and in the relationship between building bulk and open space.

The standards that describe the maximum density allowed in any given section of the city are only as real as the citizens make them. They should be a reflection of the type of urban environment that the citizens desire, consistant with existing technology. It therefore behooves the planner to consult with the people continuously in order that the consensus may be reflected in the plan. It is only under these conditions that a meaningful holding capacity can be determined and maintained.

The Planned Holding Capacity

The formulation of a population holding capacity for Berkeley must be based upon the kinds of population predictions which are usually made, reflecting economic, sociological, technological, and demographic trends. It must be supplemented by all available data concerning the existing population of Berkeley and by standards with respect to the most desirable physical environment for the people of Berkeley.

But those experienced in the theory and practice of demography contend that a reasonable, that is, a useful forecast cannot usually be made for a political subdivision of a large metropolitan region for a period of time greater than ten years. It is possible to project the population of the region for as long a period as twenty years within an appreciable range of accuracy, and competent forecasters invariably indicate a range of probability for their projections. But the data upon which the regional projection is predicated are not sufficiently precise as to warrant extrapolation beyond the ten year limit for smaller subdivisions. It must be noted that a prediction of such short-range, although of only limited utility for the formulation of a general plan, can be most useful in the programming of the public works which will carry aspects of the plan into being.

The 20 year projection, if carefully studied and derived on the basis of economic, social, technological, and demographic factors, can, in turn, indicate the extent of economic growth to be anticipated in the coming twenty years, as well as the number of people that must be accommodated in the region to provide the population bases (the working force) to support that economic growth. This will, in some respect, describe the nature of the region in the forecasted future. Perhaps it will remain the same; perhaps it will change greatly. If a change in the character of the region may be justifiably anticipated, then the planner must also give consideration to the possibility of an accompanying change in the character of the segment of that region with which he is working, in this case Berkeley.

The conclusions reached with respect to the effect on Berkeley should also be refined by a consideration of the qualifying information on the existing population's characteristics.

The refined conclusions must then again be qualified in terms of the standards which are to be applied in the plan. The standards--which specify the amount of open space which must be provided for each family, the heights of buildings, and the number of dwelling units which may be constructed upon a given area of land--must, in turn, reflect the age, family size, living habits, attitudes, occupations, income, and other characteristics of the population of the city, both today and in the future. They must also reflect the experience and studies of other cities, of public health agencies,

and of Berkeley itself. And since it is not possible at the present time to reduce all these factors to mathematical figures, the standards are also a function of many value judgments--of the needs and desires of the citizens, both as the individual citizen expresses them and as the planner interprets that expression.

The 20 year Bay Area projection, plus the information concerning the characteristics of the population of Berkeley, and plus the standards to be applied to residential development in Berkeley must be studied together in terms of themselves and evaluated qualitatively as best the judgment of the planner and his mentors will allow. On this basis and upon the basis of the existing land use patterns of the city, a general plan can then be created which includes a plan for the determined densities of residential development. This density plan establishes the optimum number of persons that can best live in the city. The implications of official adoption of a holding capacity policy by the city government are, obviously, very great.

Such a policy is a statement not only to the effect that desirable standards for living have been established; it is also a statement to the effect that the city will not tolerate an ever increasing population with its concomitant overcrowding. A ceiling is established on population growth.

That ceiling may never be reached, or it may not be reached until many years have passed. That is not really important. What is important is that the holding capacity represents a citizen-elected compromise between the short-range economic advantages of a large but overcrowded population and the social and public health advantages of a smaller population. What is also important is the certainty that, in spite of the fact that the city-wide population maximum may not be reached in the near future, no local area of the city will become overcrowded.

Effect of Holding Capacity on Population Forecasts

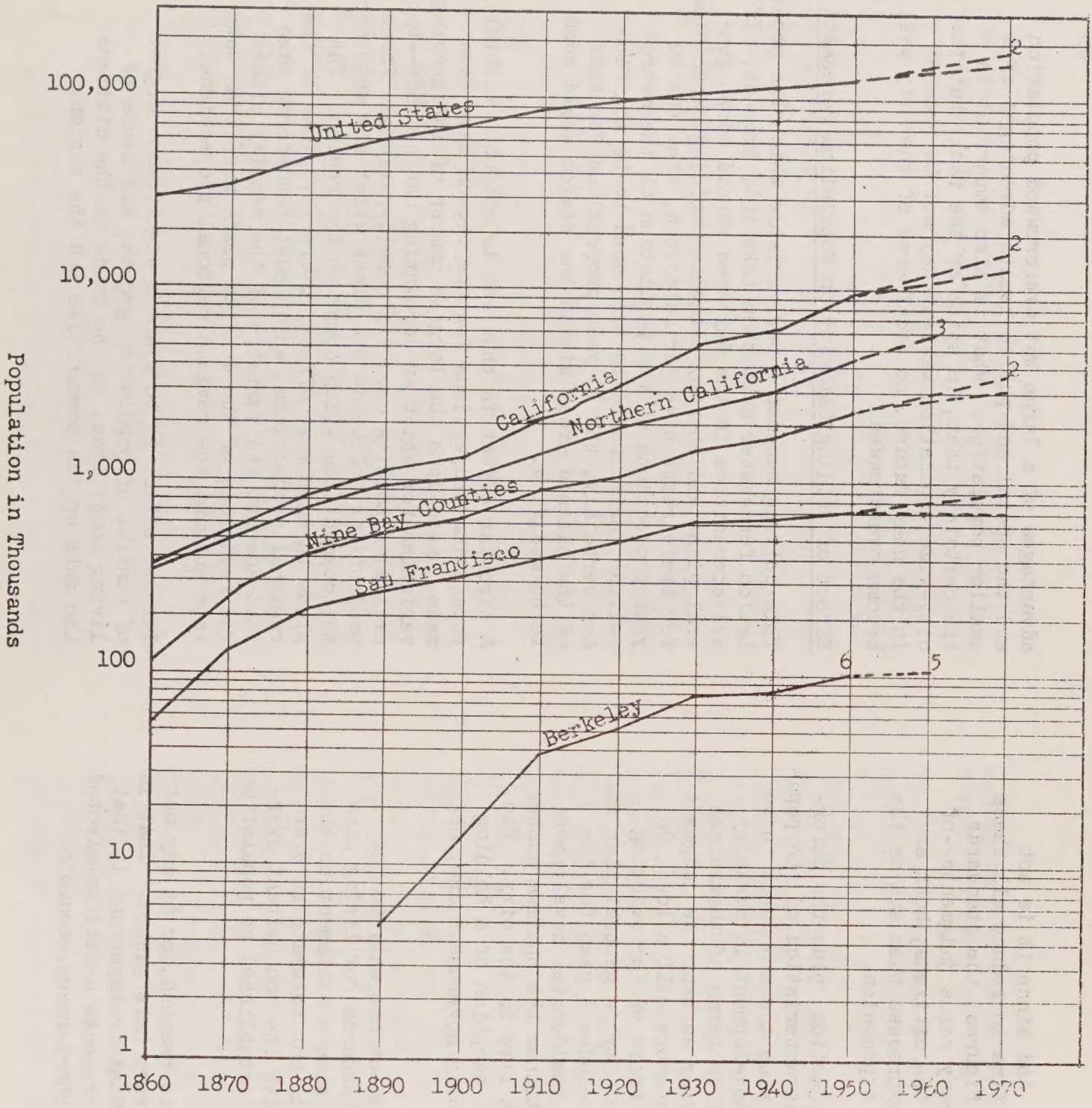
This ceiling becomes a new variable which the population forecaster must then take into account. If all communities in the Bay Area should adopt general plans and thereby establish holding capacities for their respective jurisdictions, then the 20 year projections of the population of the metropolitan region would in turn need to be modified. And certainly, the 10 year projections for each of the planned areas within the region would need to be modified.

A circular effect is thus set in motion. Initial population projections for the region have been made, based upon the largest number of influencing variables for which an accounting can be made--but excluding holding capacity considerations. These projections influence the plans which are made for the communities which comprise the region. The plans in turn must affect future revisions of the regional projections, which must henceforth take into account the variable of the density plans. The revisions of the density plans must then take into account the revised regional projections.

The net effect is to place a significant degree of control of population growth, and hence of living conditions, in the hands of the citizens who make up the communities and the region.

Chart 6

POPULATION TRENDS[1] AND FORECASTS, SELECTED AREAS, 1860-1970




[1]1860-1950 data: Bureau of the Census.

[2]V.B. Stanbery, Better Population Forecasts for Areas and Communities, May, 1951.

[3]San Francisco Chamber of Commerce, San Francisco and the Bay Area, An Economic Survey and Yearly Review, 1951, p. 11.

[4]DeLeuw, Cather and L. Segoe, Transportation Plan for San Francisco, Nov., 1948.

[5]L. Standish Hall, Report on Area, Population, and Water Consumption of the East Bay Municipal Utility District and the Special Sewer District No. 1, Part II, Growth and Distribution of Population, January, 1946.

[6]Estimated Berkeley population minus University students, who were not enumerated prior to 1950. Official count of the 1950 Census of Population is 113,805. Holding capacity of the Interim General Plan for Berkeley is approximately 150,000 persons; since no time scale can be placed against the holding capacity figure, it is not possible to represent it here. (See Table 1 for holding capacity estimating procedure.)

## C. RESIDENTIAL AREAS

The residential land use proposals of the general plan may be regarded as the keystone of the entire plan, since the validity of the remaining proposals can be no better than the approximation of need and the integrity of design for the future residential portions of the city. To a large degree the proposals for thoroughfares, transit lines, schools, parks, playgrounds, commercial, industrial, and public facilities have grown out of studies which used as the benchmark the existing and proposed residential densities. The function of these many facilities will be to serve the people who will live and work within the city; and the determination of the holding capacity of Berkeley and the locations of the homes of its citizens is the function of the residential portions of the plan.

The point of departure for the entire study, it will be recalled, is the problem associated with the residential districts as they are detailed in Berkeley's Zoning Ordinance. The ordinance apparently does not reflect the historical character of the city nor the residential land use patterns which exist today, both within the city and in the portions of the bordering cities which abut Berkeley. It allows for the construction of six-story apartment buildings over most of the flat portions of the city, in spite of the fact that very few such buildings presently exist and in spite of the fact that the Oakland and Albany ordinances allow maximum uses of only 10 per cent of Berkeley's allowable intensity in their adjoining districts.

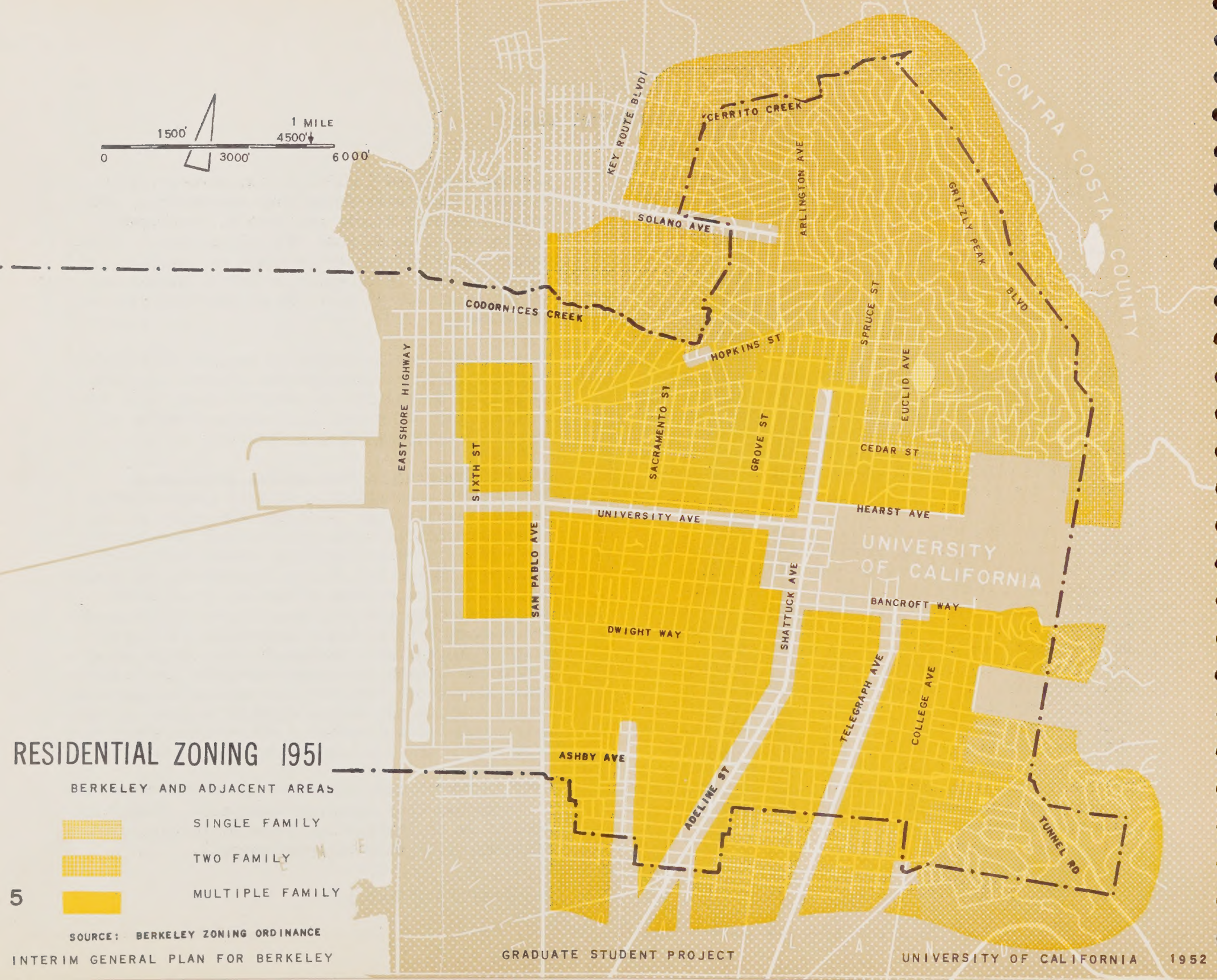
A study completed in 1951 by the Berkeley City Planning Commission found that the Berkeley ordinance presently allows residential development sufficient to house some 889,500 persons.[1] Thus, under the existing law, it would be possible for the flat lands in Berkeley to become almost as intensively used as portions of San Francisco's Chinatown.

This study, then, attempts to analyze Berkeley's residential development at the present time and to project Berkeley's residential needs into the future. Its objective is the determination of the optimum population for Berkeley.

Present Patterns of Residential Development

Berkeley is essentially a city of single-family, detached residences. With the exception of the areas immediately north and south of the University, where a relatively high concentration of apartment houses and student fraternity and dormitory structures exists, almost all residential construction in the city was originally designed for occupancy by a single household. In recent years an appreciable number of old, large, single-family structures have been converted into apartments throughout the city; but unlike the apartment houses they do not form a clearly defined multiple-unit residential district. These conversions have occurred in all sections of Berkeley; however, to

[1] Berkeley City Planning Commission, "Permitted Population in Residential Zones of Berkeley," February, 1951 (mimeographed report).


1500'
1 MILE
4500'
0
3000'
6000'
KEY ROUTE BLVD
CERRITO CREEK
ARLINGTON AVE
GRIZZLY PEAK BLVD
CONTRA COSTA COUNTY
SOLANO AVE
CODORNICES CREEK
HOPKINS ST
SPRUCE ST
EUCLID AVE
EASTSHORE HIGHWAY
SIXTH ST
SACRAMENTO ST
GROVE ST
CEDAR ST
HEARST AVE
UNIVERSITY AVE
SAN PABLO AVE
UNIVERSITY OF CALIFORNIA
BANCROFT WAY
SHATTUCK AVE
DWIGHT WAY
TELEGRAPH AVE
COLLEGE AVE
ASHBY AVE
ADELINE ST
TUNNEL RD
RESIDENTIAL ZONING 1951
BERKELEY AND ADJACENT AREAS
SINGLE FAMILY
TWO FAMILY
MULTIPLE FAMILY
5
SOURCE: BERKELEY ZONING ORDINANCE
INTERIM GENERAL PLAN FOR BERKELEY
GRADUATE STUDENT PROJECT
UNIVERSITY OF CALIFORNIA
1952

date, the net effect has not been materially to reshape the residential character of the city. Residential uses occupy 62.4 per cent of the city's total land, exclusive of streets; approximately three-fourths of all residential land is still in single-family development.

The city-wide distribution of residential land use by number of parcels and number of acres is as follows:[2]

| Residential Use | Parcels in Use | Per Cent of All Residential Parcels in Use | Acres in Use | Per Cent of All Residential Acres in Use |
|---|---|---|---|---|
| 1 Family... | 17,036 | 77.7 | 2,170.6 | 74.2 |
| 2 Family... | 2,505 | 11.4 | 313.1 | 10.7 |
| 3-5 Family. | 1,484 | 6.8 | 206.4 | 7.0 |
| 6-9 Family. | 405 | 1.8 | 89.6 | 3.3 |
| 10+ Family. | 185 | 0.8 | 40.5 | 1.4 |
| Rooming, Fraternity, Hotel..... | 337 | 1.5 | 101.6 | 3.4 |
| Total..... | 21,952 | 100.0 | 2,921.8 | 100.0 |

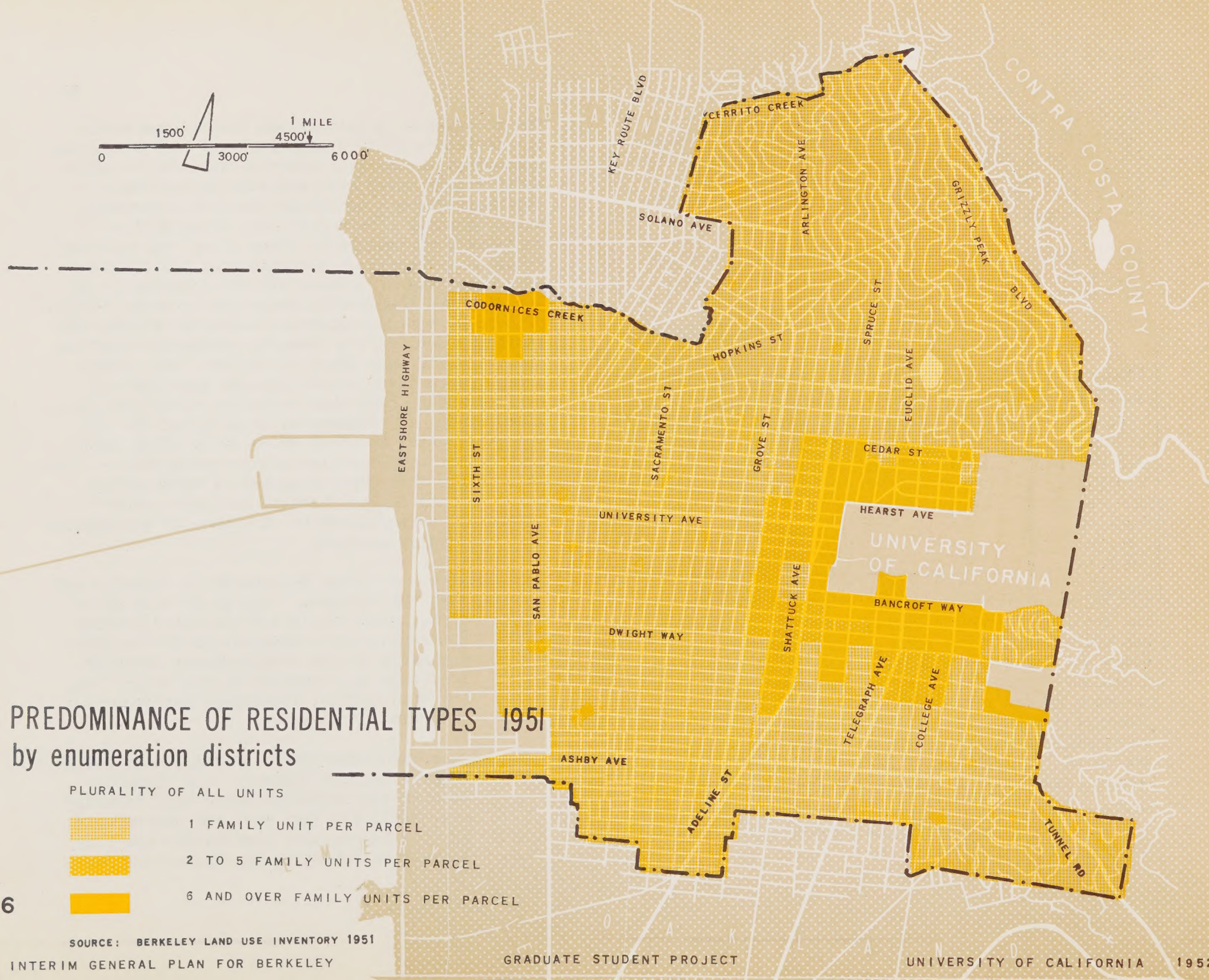
The fact of the single-family residential character has been deemed to be of major significance in this study and the Interim General Plan is largely a reflection of this fact. For it has been assumed that, in spite of the recent conversions which have been underway and in spite of the construction of new apartments which has recently takenplace, it is the desire of the citizens of Berkeley that it shall remain essentially a city of single-family homes.

[2]Berkeley City Planning Department, 1951 Land Use Inventory.

The single-family pattern was established early in the city's history when Berkeley was a suburban community, occupying a position relative to that which Walnut Creek and Lafayette occupy today. East Berkeley was a college town; West Berkeley was a commuter's town with only a negligible sprinkling of industrial firms along the railroad tracks. A very large percentage of its citizens were commuters to Oakland and San Francisco, and the city was then sufficiently far from the centers of commercial and industrial activity to have successfully avoided the tenement congestion that has characterized many American cities. But, oddly enough, when the distance between Berkeley and Oakland shrank, and when Berkeley itself developed a commercial and industrial vitality of its own, the residential crowding which is so often associated with such activity did not materialize. The reasons for this offer a number of interesting opportunities for conjecture, and this report offers no certain answers. A number of assumptions have been made, however.

1. That the citizens who reside in Berkeley and that the builders, through private covenants, consciously and jealously guarded the residential character which the predominance of the single-family detached structure has imparted to the city; i.e., this residential atmosphere has been no historical accident.

2. It has been possible to maintain this pattern largely because industry- and commerce-induced population pressure upon Berkeley was, until the last war, not exceedingly great. Undeveloped land within the city, increasing densities in Oakland and San


1500'
1 MILE
4500'
0
3000'
6000'
KEY ROUTE BLVD
CERRITO CREEK
ARLINGTON AVE
GRIZZLY PEAK BLVD
SOLANO AVE
CONTRA COSTA COUNTY
CODORNICES CREEK
HOPKINS ST
SPRUCE ST
EUCLID AVE
EASTSHORE HIGHWAY
SIXTH ST
SACRAMENTO ST
GROVE ST
CEDAR ST
HEARST AVE
UNIVERSITY OF CALIFORNIA
UNIVERSITY AVE
SAN PABLO AVE
SHATTUCK AVE
BANCROFT WAY
DWIGHT WAY
TELEGRAPH AVE
COLLEGE AVE
ASHBY AVE
ADELINE ST
TUNNEL RD
PREDOMINANCE OF RESIDENTIAL TYPES 1951
by enumeration districts
PLURALITY OF ALL UNITS
1 FAMILY UNIT PER PARCEL
2 TO 5 FAMILY UNITS PER PARCEL
6 AND OVER FAMILY UNITS PER PARCEL
SOURCE: BERKELEY LAND USE INVENTORY 1951
INTERIM GENERAL PLAN FOR BERKELEY
GRADUATE STUDENT PROJECT
UNIVERSITY OF CALIFORNIA
1952

6

Francisco, and the development of fringe areas of the region were capable of absorbing the influx of immigrants and the natural population increase.

3. Wartime pressures were in large part absorbed in war housing throughout the Bay Area, in Berkeley's war housing, and in the multi-unit and garden apartment structures erected within the city under Title VI of the 1941 Housing Act. Moreover, the over-all shortages of building materials during the war inhibited larger-scale private construction of new multiple-unit structures at that time. (It may be pointed out that outside the Codornices Village site the only level vacant land available in Berkeley at the beginning of the war was in scattered small parcels which were not conducive to large-scale public war housing.)

4. The urbanization of Richmond, the South Bay, the interior of Contra Costa County, and the Peninsula in the years since the termination of the war has diminished the population pressure upon Berkeley and has thus greatly reduced the investment potential which might otherwise have converted Berkeley into a city of apartment dwellings.

If these assumptions be valid, it is nonetheless critical to note that the number of conversions of single-family dwellings into apartments has been steadily increasing since the early days of the war. Postwar rates of construction of new apartment houses have exceeded prewar rates, and only the building materials restrictions generated by the Korean War have decelerated this movement. A large share of total postwar dwelling unit construction has been absorbed in apartment type structures. Postwar construction on the remaining vacant parcels in the flat-land area has in most cases produced structures containing at least two dwelling units. This movement probably reflects a natural change in the residential character of Berkeley--a change which many cities, once peripheral to a metropolitan region, experience when the region expands around them. However, there are two mitigating factors attendant with this change which bear mentioning so that the magnitude of this movement towards more intensive residential development may be properly evaluated.

First and foremost of these factors is that government guarantees to the builders following the war gave almost unlimited insurance against financial loss. The second factor, one peculiar to Berkeley, was that of the unprecedented enrollment in the University and the various theological, technical, business and other schools in the area immediately following the war. Veterans subsidized by the G. I. Bill, who were mainly responsible for this student population increase, represented an older and more mature student body than seen heretofore. Normal student accommodations usually associated with college life, such as dormitories, fraternities, sororities, and boarding houses, did not suit the student-veterans' needs, especially those who were married. It is difficult to assess the degree to which the trend in multi-unit conversion and construction was generated by this temporary and acute demand for complete dwelling units. However, it may be assumed that more than a few landlords were not

oblivious to what amounted to a healthy housing demand guaranteed by the government for at least a period of six years. Since the rents on their dwelling units were frozen at the 1940 scales, they capitalized on this opportunity to remove their properties from under rent controls by merely converting them to more intensive use. It is also assumed that this guaranteed housing market likewise gave further impetus to new apartment construction and accelerated the rate of building over that which normally would have taken place.

Nevertheless, the important fact remains that with the development of the East Bay communities to the north, Berkeley is no longer a suburb; it is gradually becoming a central city with many of the industrial, commercial and cultural appurtenances which characterize such a community. As a central city, it may have an added attraction to business firms and to home seekers in the years ahead; hence, it may acquire many of the residential characteristics of the central city. However, these characteristics need not be synonymous with congestion, blight, and unhealthy living conditions. Through a plan which provides for the allocation of land uses and the densities of population, Berkeley can avoid these common pitfalls of metropolitan expansion.

Density

The pattern of residential development may be described in terms other than those of structural types. By determining the acreage of lands used for residential purposes and the numbers of persons living upon that land, a figure representing the average number of persons occupying an average acre of land may be readily derived. Such a "density" figure is in many ways a very useful analytical device; for it summarizes the information on structural type, land coverage, height of buildings, lot size, and population counts. This summary figure may then be used to compare the intensity of the use of land in one area with the intensity of the use of land in another. In this way different sections of a city or of different cities can be compared, or the same area can be studied in terms of its degree of development at different periods of time. Although there are many ways of expressing density, the figures used in this report all represent "net residential density," that is, the number of persons occupying a given area of land which is used for residential purposes only.

Thus, for example, the three blocks surrounded by University Avenue, Milvia Street, Allston Way, and Grove Street together had a density in 1950 of 73.5 persons per net residential acre. These blocks include the Civic Center Plaza, the State Farm Insurance Building, a number of stores, industrial shops, and some vacant land, as well as an apartment house, six duplex structures, four single family units, and a number of apartments over stores. The three blocks comprise 18.8 acres, excluding the acreage in city streets; but the land used for residence occupies only 2.6 acres. In April 1950, at the time the census was enumerated, 191 persons lived within the three blocks (which comprise the Census Bureau's Enumeration District No. 144). The number of persons (191) divided by residential acres (2.6) yields the density figure of 73.5.

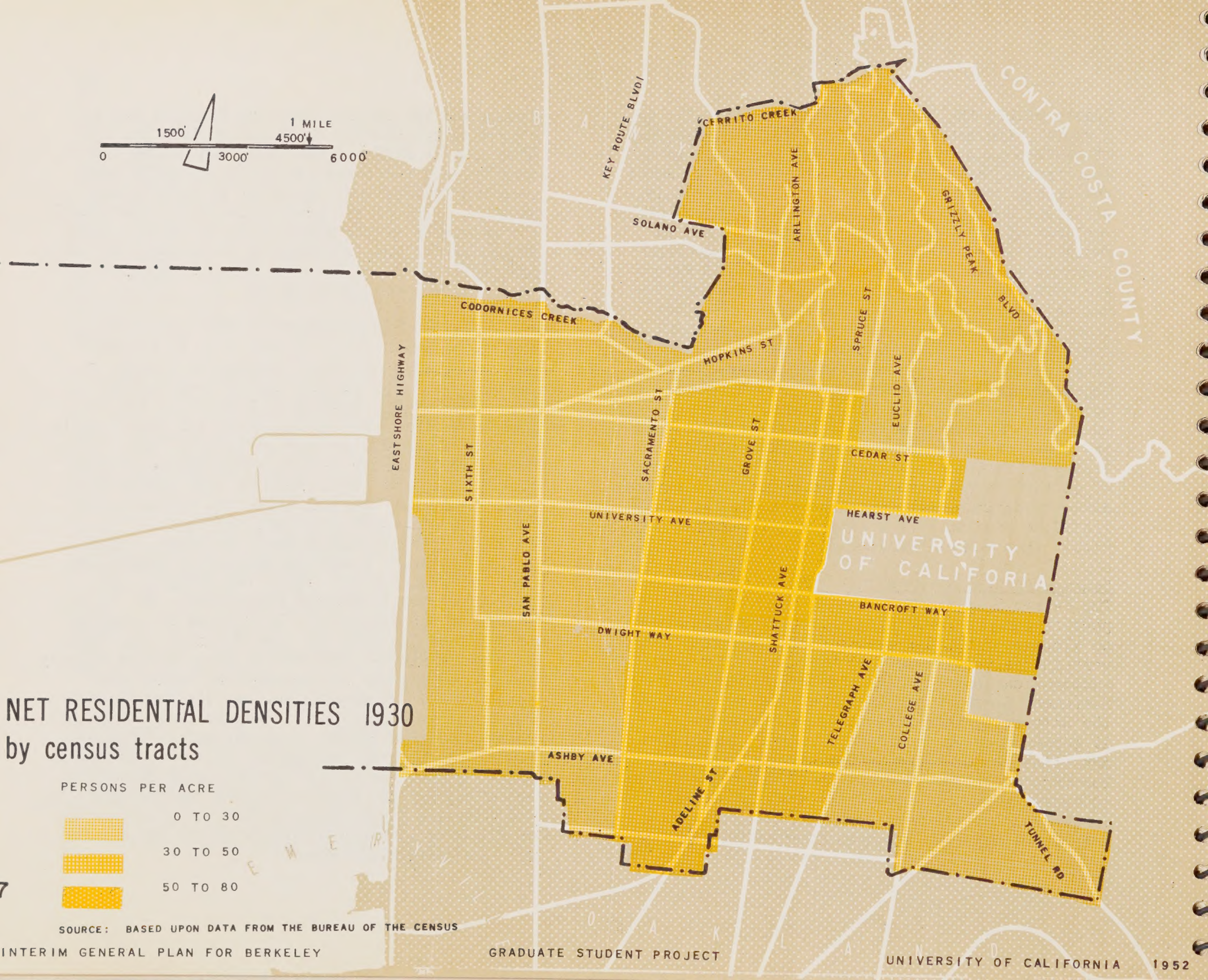
A similar set of calculations has been made for the 215 Enumeration Districts and the 26 Census

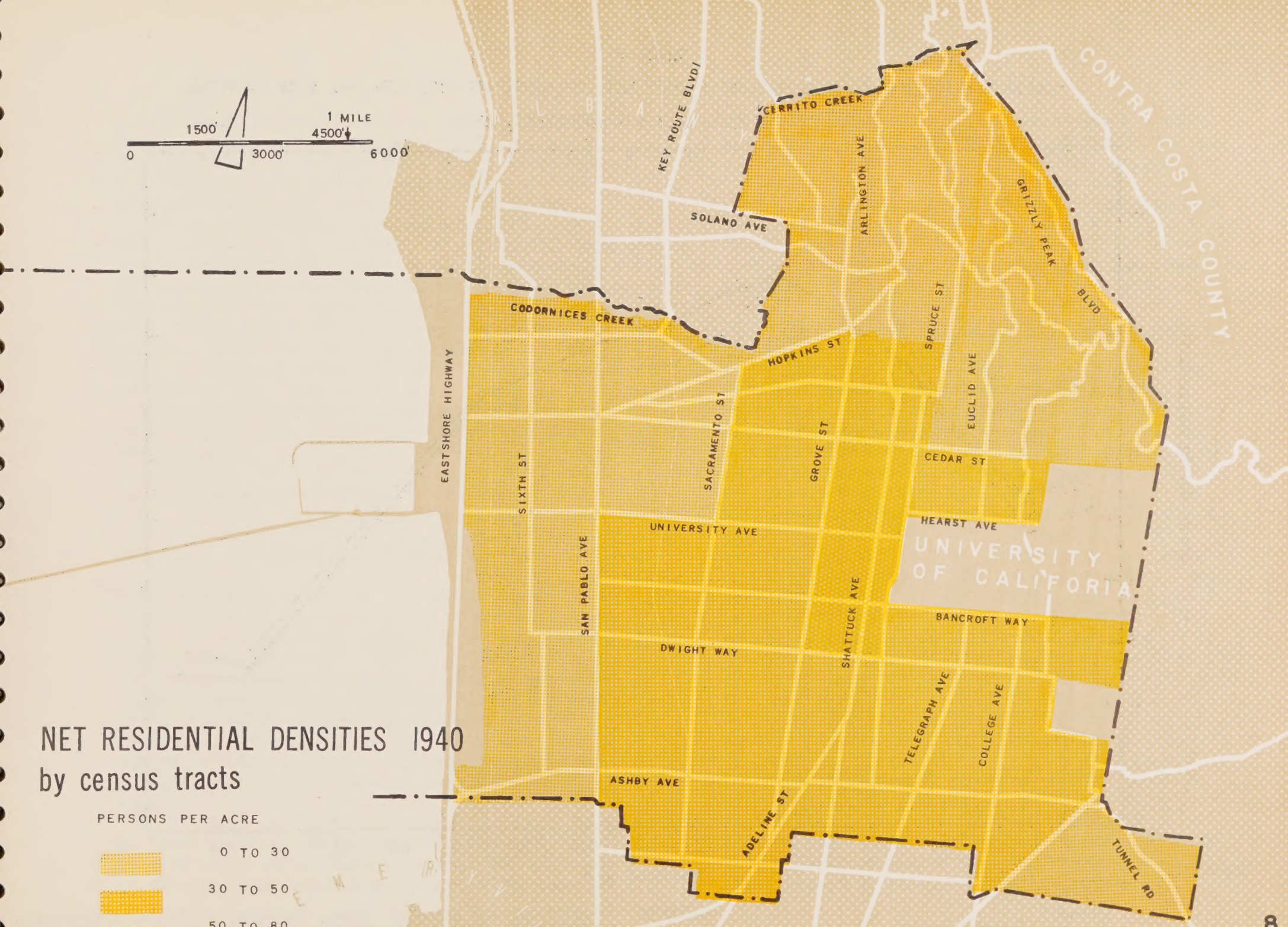
Tracts within the city as well as for the city as a whole. The tables summarizing these figures may be consulted in the Appendix, and the findings are illustrated in Plate 9. Plates 7, 8, and 9 depict the trends in the intensity of the use of residential land during the past two decades. Since the smallest area for which 1950 population data is available is the Enumeration District, which is from one to eight blocks in size, (and for 1930 and 1940, the Census Tracts), the density of smaller areas cannot be determined. The boundaries of the density patterns shown on the maps are therefore only approximate; indeed, the density range itself is only approximate, since a two-block enumeration district might conceivably contain one block which is very intensively used (all apartment structures with a large population) and one block which is sparsely used (all single-family units with large yards). Since this type of pattern is not common, the maps probably reflect actual densities with appreciable accuracy. They should be read to show a general, city-wide, rather than a block-by-block picture, however.

Density Pattern in Berkeley, 1950

The over-all, city-wide density in 1950 was 38.9 persons per net residential acre. This represents an average of all the sections of town, some used very intensively, some very sparsely. The lowest enumeration district densities are those in the Claremont District and in the hill areas north of the University where densities approximate 13 to 15 persons per net residential acre. The highest densities surround the campus and the Central Business District, where figures running well over 100 persons per net residential acre are common. In general, as the maps indicate, the hill areas are of low density, the area surrounding the campus and the Central Business District are of high density, and the remainder of the city is of medium density. A band surrounding the high density area and bands stretching down the two main trafficways into the city, University and Shattuck Avenues, are more intensively used than the remainder of the medium density areas. The Codornices Village war-housing development at the northwest corner of the city shows as an area of very intensive residential use.

The numerical classification scheme used here represents low density as less than 30 persons per net residential acre, low-medium density as between 31 and 50 persons per net residential acre, high-medium density as between 51 and 80 persons per net residential acre, and high density as over 80 persons per net residential acre. This breakdown is merely an analytical device, developed to simplify the picture of 1951 residential land use in Berkeley and grows out of the actual condition of residential land use in the city. It would not necessarily apply to other cities in the Bay Area, where the pattern of population density is different. Thus, for example, the classification of density ranges which was tailor-fitted to San Francisco's conditions and applied to her land use plan is: low density, less than 55 persons per net residential acre; medium density, 56-100 persons per net residential acre; high density, 101-220 persons per net residential acre. For comparison purposes, it may be noted that the density of some blocks in San Francisco's Chinatown is as high as 700 persons per net residential acre; in the Mission and in the Marina Districts, approximately 100 persons; in the Western Addition, 150 persons; in St. Francis Wood, 15 persons; and in the city as a whole, approximately 90 persons per net residential acre.


1500'
1 MILE
4500'
0
3000'
6000'
KEY ROUTE BLVD
CERRITO CREEK
CONTRA COSTA COUNTY
SOLANO AVE
ARLINGTON AVE
GRIZZLY PEAK BLVD
CODORNICES CREEK
EASTSHORE HIGHWAY
HOPKINS ST
SPRUCE ST
EUCLID AVE
SIXTH ST
SACRAMENTO ST
GROVE ST
CEDAR ST
UNIVERSITY AVE
HEARST AVE
UNIVERSITY OF CALIFORIA
SAN PABLO AVE
SHATTUCK AVE
BANCROFT WAY
DWIGHT WAY
TELEGRAPH AVE
COLLEGE AVE
ASHBY AVE
ADELINE ST
TUNNEL RD
NET RESIDENTIAL DENSITIES 1930
by census tracts
PERSONS PER ACRE
0 TO 30
30 TO 50
50 TO 80
SOURCE: BASED UPON DATA FROM THE BUREAU OF THE CENSUS
INTERIM GENERAL PLAN FOR BERKELEY
GRADUATE STUDENT PROJECT
UNIVERSITY OF CALIFORNIA
1952




# NET RESIDENTIAL DENSITIES 1940
## by census tracts

PERSONS PER ACRE

0 TO 30

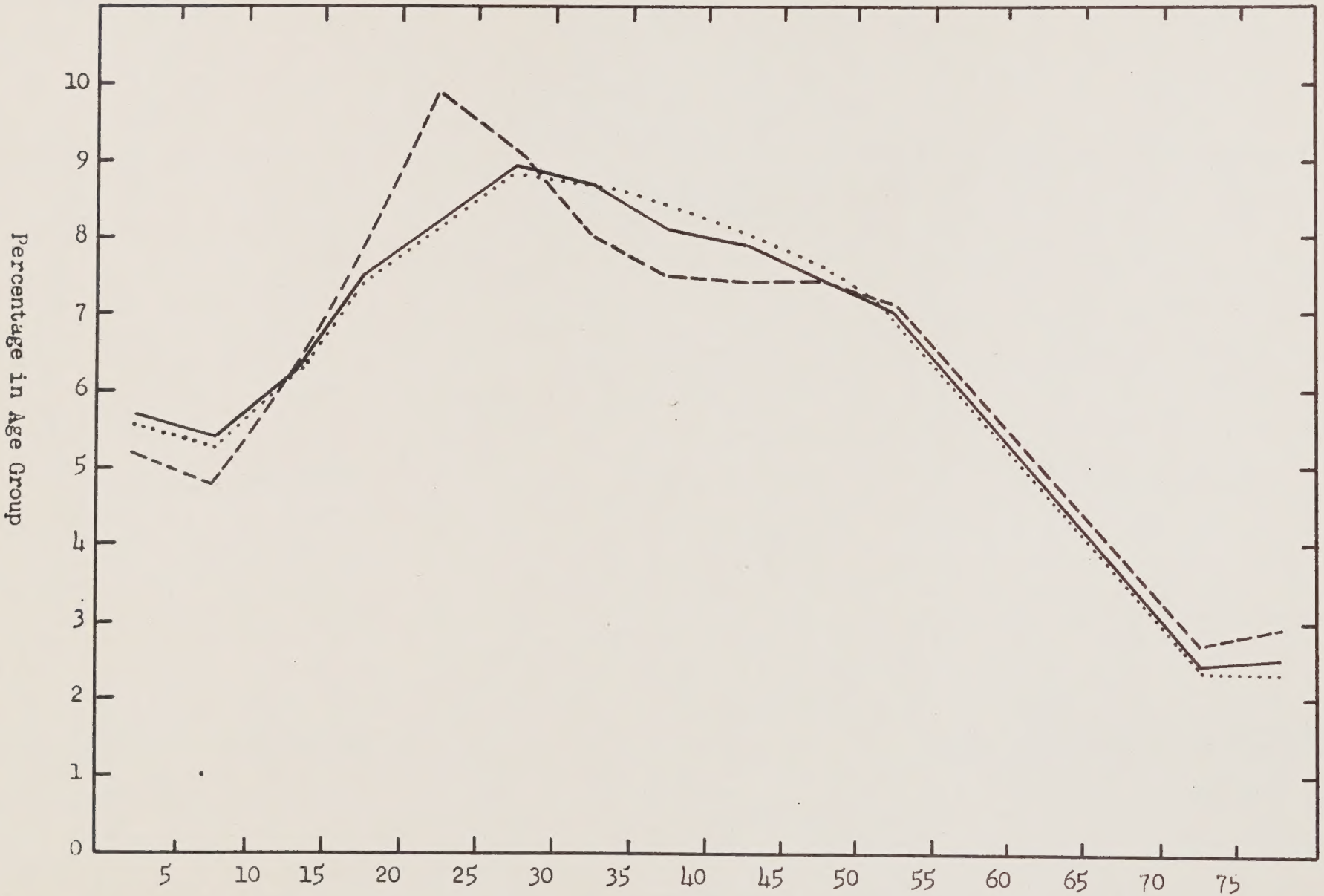
30 TO 50

50 TO 80

SOURCE: BASED UPON DATA FROM THE BUREAU OF THE CENSUS

CHART 7

COMPARISON OF THE AGE COMPOSITION OF BERKELEY, OAKLAND, AND THE NINE BAY AREA COUNTIES, WITHIN FIVE-YEAR AGE INTERVALS, 1940




LEGEND:

Berkeley
Oakland
Nine Bay Area Counties

SOURCE: Population and Economic Data, Berkeley 1910-1940, Department of City Planning, Berkeley, July 1949, Tables 5-6, pp. 8-10

The Berkeley density ranges may be translated into building types of the kind which are typical of the city in order to give the figures a scale for interpretation. A city block composed of lots measuring 50" x 135" (.15 acres), having one single-family detached dwelling structure per lot, and occupied by families of 3 persons, would have a net residential density of approximately 20 persons. The same block having a duplex structure on every lot, each unit occupied by a family of 3, would have a net residential density of 40 persons. With four units on every lot and families of the same size, the density would be 80 persons per net residential acre. Built up entirely with eight-unit apartment buildings, the density would rise to 160 persons per net residential acre.

These figures are intended to be illustrative only. In fact, the existing net residential densities depicted on Plate 9 only rarely reflect such pure stratification of dwelling types.

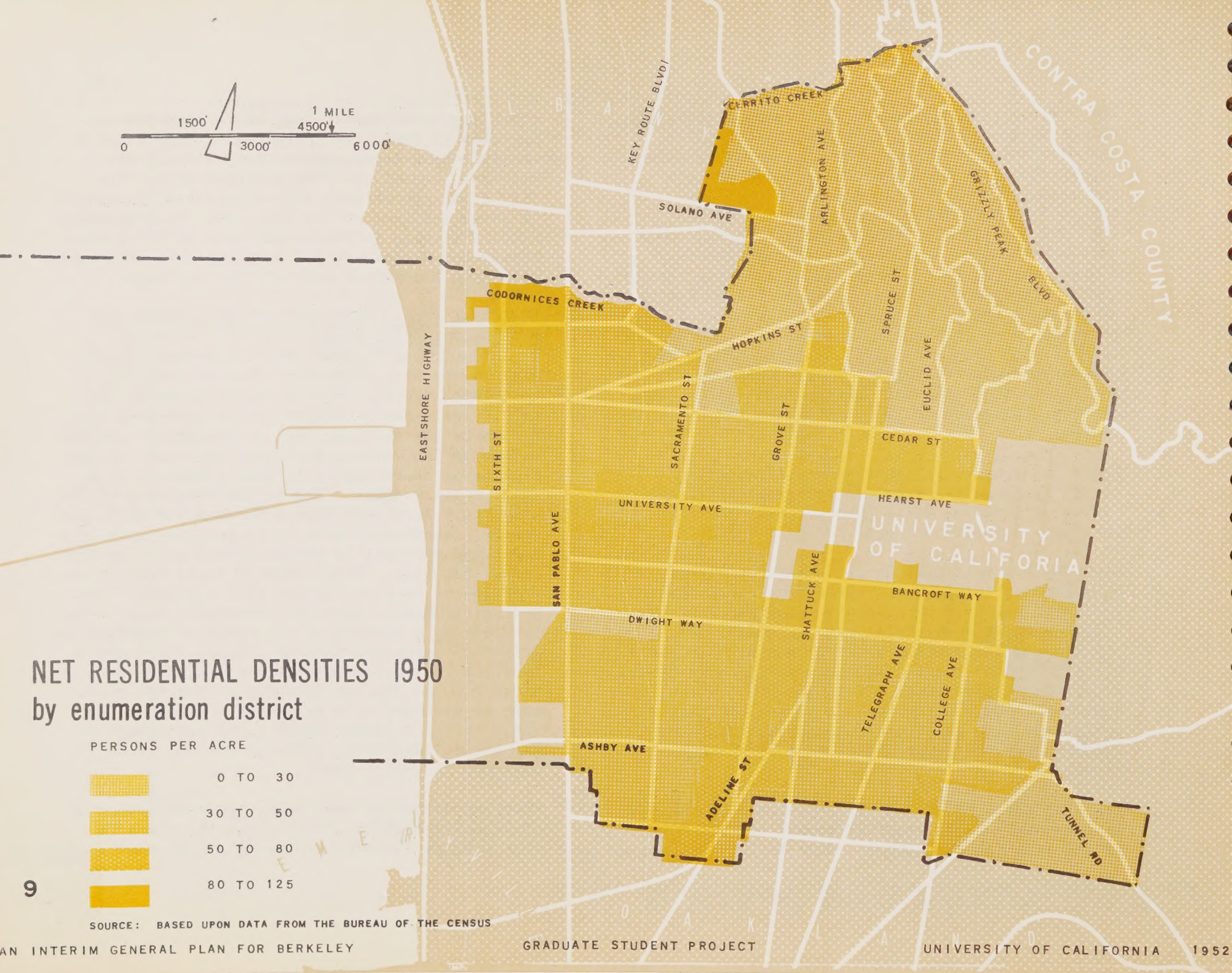
Berkeley's development is not homogeneously of high density in any areas other than those developed with war housing. In all other parts of the city, duplex and multiple-unit structures are built among single-family units; and even in the highest density section adjacent to the University, single-family dwellings are interspersed with apartments and rooming houses. Thus, Berkeley's medium and high densities represent averages resulting from the admixture of many structural types.

In large portions of the city, on the other hand, single-family units comprise almost 100 per cent of the existing structures. This is the case in the hilly areas especially, where with the exceptions of scattered instances of duplex and of multiple-unit developments, both old and new buildings contain but one dwelling unit. The flat areas approximate this single-family pattern in large sections of the city, and the low-medium density average is the consequence of but a relatively few duplex and 3-5 dwelling unit structures scattered throughout most of the flat land.

Effect of Family Size and Age Composition upon Residential Development

It is important to note that the average family size varies with different types of dwelling units and, indeed, with different areas of the city. For example, in 1940 there were less than 2 persons per dwelling unit in the apartments and hotels in the Central Business District. In the hill areas there were well over 3 persons to a unit on the everage. And in the remainder of the city there were less than 3 persons per unit. In general, apartments tend to be occupied by single unmarried persons, by adult companions or by two-person families. Single-family units tend to be occupied by married couples with children. The median range multiple-unit structures tend to be occupied by a mixture of all types of families and groups of unmarried persons. Since there are no hard and fast rules in such matters, such conclusions and the figures upon which they are based must be regarded only as generalizations. The table in the Appendix showing the percentage of families of different sizes as of 1940 is of interest in this regard.

The composition of the family is a reflection of the age composition of the population, and in this respect Berkeley manifests a number of






AN INTERIM GENERAL PLAN FOR BERKELEY GRADUATE STUDENT PROJECT UNIVERSITY OF CALIFORNIA 1952

interesting characteristics which are unique in the Bay Area.[3] The most striking difference between Berkeley and its neighboring communities has been the large percentage of its population in the 20-25 age group, largely University and college students it is to be assumed. A smaller percentage of its citizens have been under 5 years of age than has been the case in the rest of the region. And, quite significantly, there has been a slightly higher proportion of the Berkeley population in the 65 years and older group and a markedly lower proportion in the 30-45 age group than in the other communities (see Chart 7).

The implications are perhaps clear, that there are relatively fewer families with children in Berkeley than in the Bay Area as a whole. Probably largely because of the presence of the University, a higher percentage of retired persons seem to choose Berkeley as their home. Having passed the childbearing age, they often live as two-person families and desire living accommodations which do not require extensive maintenance. Many seem to prefer apartment accommodations to detached dwelling structures; however, no studies have yet geen made in an attempt to ascertain the appropriate design of residential facilities for aged persons; and the present propensity of the aged to live in apartment buildings may merely reflect the absence of facilities properly designed to meet their specific needs.

[3]Since the 1950 Census reports covering the population characteristics of Berkeley have not yet been published, these observations are based upon the Census reports for the years 1910, 1920, 1930 and 1940. The assumption is made that the same general relationships still hold.

The University students, many of them unmarried, are attracted to dormitory, fraternity, sorority, and boarding house accommodations. The lower proportion of young children would suggest that Berkeley requires a smaller percentage of housing units and public facilities designed to accommodate children. The implications of these factors for the design of the density portions of the Interim General Plan will be discussed below. It is important here merely to note that this unique characteristic of Berkeley is reflected only vaguely in its residential developments and that families of any given type seem to live intermingled with families of other types. This is true, notably, of the student population which is actually scattered throughout the city and the Bay Area.

Recent Developments

During the past decade the increase in residential densities has resulted from four major types of activity.

Conversions. Old, large single-family units have been subdivided into a number of smaller apartments, often without adequate plumbing facilities. The largest proportion of such conversions has occurred within a radius of three-fourths of a mile of the University; and they are presently occupied by the locally employed industrial and clerical workers, commuters, and the retired aged, as well as by students. As previously noted the war and postwar market for housing in the city has made such conversion profitable; and, as with many such land use patterns, once underway, the movement for conversion tended to breed still further conversion. Residential areas which were at one time deemed to be among the finest in the

city had become aged; the former residents had moved into more newly developed areas; and with encroachment of higher density conversions, they too were cut up and rented for a higher total rent than they could demand as single-family units. The story is, of course, an old one and recalls the odyssey of "the proud old brownstones of New York." The effect of the widespread conversion in Berkeley has been, as it was in New York, to crowd a large number of persons into the space once occupied by a single family, without a proportionate increase in the amount of plumbing and other facilities which such an increase would require. Moreover, because the buildings were old at the time of conversion, the more crowded conditions occurred in a less pleasant environment.

Garden Cottages. A building type which is perhaps peculiar to Berkeley is a species called "garden cottage," an unattached apartment built in the rear- or side-yard of an existing single-family structure. Units of this type are to be found throughout the flat areas of the city, tucked away behind the house on the street. The statistical materials which accompany this report tally these combinations as two-family developments, since the basis of classification is the number of dwelling units occupying a single parcel of land. The cottage type of development has many attributes which the duplex does not have; although the usable open space per lot is considerably reduced, the statistical density of the two would be the same. In terms of usable open space, the true duplex is probably of lower real density, however.

Non-Conforming Duplexes. An unknown proportion of Berkeley's density increase is the resultant of a phenomen commonly referred to as the "bootleg-duplex." Families throughout the city have rented portions of their single-family dwellings to single persons and married couples, in some cases with kitchen privileges, in others with rooming rights only. Others, even in the R-1 Single-Family Zoning District, have built additional kitchens and baths into single-family structures, thus converting them to duplexes. Conversion work is sometimes performed by the owner, at other times by contractors; but in the cases where the zoning ordinance disallows it, building permits are not issued, and the work is hence illegal. Enforcement of the zoning ordinance and the building codes is not always possible, especially in those cases in which the work is performed by the owner; and there is no official record of the conversion having taken place. For this reason, and since the statistical land use materials accompanying this report were derived from official city sources, the numbers of single-family uses shown in the tables and in the plates may be inaccurately high. This is especially true if the Census Bureau's definition of a dwelling unit is adopted, since its minimum requirement for a dwelling unit is a living accommodation for one or more persons having a private entrance. Thus a one-room accommodation which is rented to a non-family member may be regarded by the Census Bureau as a dwelling unit. The tables in this report do not reflect this definition. The requirement here is that a dwelling unit be a structural entity, having a kitchen, occupying a separate cottage-type building, or otherwise being a

relatively permanent structural unit. The density data does reflect the increased intensity of use, however.

Multiple-Unit Structures. The fourth contributor to Berkeley's increasing density is, of course, the construction of the new, multiple-unit dwelling structures referred to above. A number of serious questions have been under discussion during the past few years concerning the feasibility of the apartment structure in the contemporary economic scene and in the light of the present trend toward suburban living. Some of the recent experience of investors in apartment structures may indicate that the profitability of this type of venture is no longer sufficient to warrant apartment house construction. Building costs have been rising very rapidly, and as a necessary consequence, rentals have been very high. It is the high rent which is, of course, the major deterrent to the potential tenant; and since the new building must compete in the same market with older structures, constructed at very much lower cost and with lower density developments which offer more outdoor living space, many recently constructed apartment buildings within the Bay Area are presently standing idle. The implications of this pattern, if it be a real pattern, for Berkeley are not known. It is important only to note that in some areas of the city, and notably around the University campus, there have been an appreciable number of new, rentable, multiple-unit structures erected in recent years. Most of these contain less than 12 dwelling units of small size. The University market is relatively stable over the long run, and it may perhaps be validly assumed that with or without encouragement from the city government, more units of the same type will be constructed in the future.

Land Available for New Construction. Berkeley has been called a built-up town, most of the residential building sites in the city having been developed. In spite of the fact that 10 per cent of the city (excluding streets) is vacant, this is largely true. There is a sparse sprinkling of vacant lots throughout most of the city which amount to but a neglible percentage of the total land. Most of the vacant acreage occurs in two areas. Approximately a third of it in the area west of San Pablo Avenue, approximately one-half of it along the steep, hill block on the eastern border of the city.

The West of San Pablo area has been developing in industrial use, and many of the vacant parcels are presently zoned for industry. While the Berkeley ordinance does not prohibit the construction of residences in an industrial zone, it regulates all residential construction in the industrial zone under special permit procedure. It is assumed that in the future the vacant parcels in the areas recommended for industrial use will not be developed for residential use. Present indications suggest that people living within the present industrially zoned areas are gradually moving out.

There is nevertheless an appreciable amount of vacant land west of San Pablo Avenue within the areas recommended for residential use, and this area could consequently become the site of a new residential building boom of small scale. The range of quality of the existing residential development in this area is extreme. There are

old, shack-like, unpainted buildings which were built in the first years of West Berkeley's history and which are now nearing full deterioration. There are also some of the finest, best maintained, new developments in the city. The Unified School District has recently completed a new, modern school plant in the area; and in the light of the community pride which the residents west of San Pablo Avenue have exhibited in the past, it may be anticipated that this entire portion of the city will be remodeled with the construction of the large number of new dwelling structures which the vacant land and the decaying buildings make possible. Although no specific studies have been conducted with respect to the potential amounts of land which may become available for new construction in this area, careful perusal of the Berkeley Land Use Map and casual field observations suggest that a substantial percentage of the present residential district might be available for new construction within the next decade.

The other area which is sparsely developed at present is the steep hillside along the eastern edge of the city. In spite of the attraction which the Berkeley Hills hold for homesite hunters, there are presently about 1,100 lots, comprising some 240 acres, which are vacant. Most of these occur in the area directly north of the University. The major deterrent to construction has been the cost of building on the steep sites, which have been left to be developed last. There has long been much discussion of the "unbuildable site" in the Oakland-Berkeley Hills; but during the course of the discussion the number of unbuildable sites has gradually decreased, as architects, engineers, and builders have slowly worked their footings into the hillsides. There are many who believe that there will soon no longer be an unbuildable site and that the patches of vacant land will become filled with residential development. If this latter proposition proves to be accurate, it may be anticipated that some 1,100 additional residential structures will be added to the city's property inventory.

An additional factor which has discouraged the development of the hilly lands is the presence of an appreciable section of the slope which has been slowly slipping downgrade. In some portions of the slide area, slippage has been so severe as to have caused buildings to move across legally fixed property lines, or at least so the legend would have it. But in spite of the severity of the slide, new buildings are steadily being erected. The effect of the new construction has been to lessen the degree of slippage, since rain water which is collected on roof tops and paved areas is drained into the storm sewers and ground water is thereby reduced. As the degree of coverage is increased, there is a further inducement for still further development; and it is not unlikely that in the course of time the entire slide area will be developed for residential use.

Thus it may be concluded that the deterring effect of the slope and of the slide may eventually be overcome and that the Berkeley Hills will become fully built-upon with residential structures and, perhaps, with other facilities to service those residences.

The 1950 Census of Housing preliminary count of Berkeley's dwelling units may be supplemented by estimates made by the Berkeley City Planning

Commission to yield the following distribution of dwelling units by age of unit, as of December 31, 1951:

| Age | Number of Dwelling Units | Percentage of All Dwelling Units |
|---|---|---|
| 11 years old or less... | 8,814 | 22.8 |
| 12 to 21 years old..... | 3,070 | 8.0 |
| 22 to 31 years old..... | 12,013 | 31.1 |
| 32 to 51 years old..... | 11,992 | 31.0 |
| 52 or more years old... | 2,229 | 5.8 |
| Age unknown..... | 515 | 1.3 |
| Total number of units. | 38,633 | 100.0 |

The scarcity of vacant sites throughout the largest portion of the city suggests that major new residential construction will occur on lands cleared by the demolition of existing structures which are becoming obsolescent. Field surveys and the opinions of the Berkeley housing inspector indicate that in spite of the fact that almost two-thirds of the city's residential buildings are now between 22 and 51 years old, by and large the quality of Berkeley's housing is high. Although only approximately half of the dwelling units in 1940 were owner-occupied, yards and lawns are well maintained and the buildings are kept in good repair. It is probably fair to judge that there is no section of the city which is blighted; although there are scattered buildings which are in disrepair.

It is difficult to assess the life of a building except upon detailed study; aged buildings, constructed of fine materials and workmanship, often outlive newer, more poorly built units. But, in brief, it is believed that in the course of the next two decades in some portions of the city existing structures will have been removed, whether singly or on a block basis, and replaced with newer developments. No large-scale demolitions are imminent; rather, in accordance with a slow evolutionary process, the residential elements of the city will be gradually replaced.

In spite of the present "built-upness" of Berkeley it can house itself and its new residents without having to resort to the partitioning of old dwelling units into smaller, less desirable ones. And it can also accomplish this aim without utilizing the land, which is constantly becoming available, so intensively as to sacrifice those amenities which have made Berkeley a beautiful residential community of world renown. It is on these premises that the plan proposals which follow are based.

## Residential Portions of the Interim General Plan

Objectives. The plan represents an attempt to accomplish the following specific objectives:

1. To create a framework for the growth of Berkeley's residential areas, which reflects the desires of Berkeley's citizens, and which will assist in guiding Berkeley's development in conformity with the development of the neighboring cities and counties and with the development of the metropolitan region as a whole.

2. To describe those areas of the city best suited for residential use.

3. To prescribe maximum population densities for residential areas so that they will be able to accommodate Berkeley's proper share of future regional population increase without becoming overcrowded with people or buildings.

4. To relate residential areas to each other so as to provide full opportunity for social contact between all groups and individuals.

5. To create an efficient relationship between residential areas and a desired pattern of transportation routes.

6. Within living areas to create an efficient relationship between residential and related uses, and to reduce inefficiencies resulting from the existence of inharmonious uses.

7. To provide facilities for groups of individuals having common environmental needs.

8. To better integrate residential areas with commercial, industrial, recreational and cultural areas so as to meet the changing needs of individuals as they pass from infancy to old age.

9. To assist in the provision of a wide variety of living accommodations in residential areas in order that there will be a broad range of choice for all individuals and families to live in types of dwellings which they deem to be most desirable and in environments which do not necessarily compel segregation by family size, or by ethnic, economic or age groups.

Principles. The major principles which have been applied in the plan for residential areas may be summarized as follows:

1. Residential areas should be so located and so designed as to avoid obnoxious odors, noises, and views of industrial and commercial areas and of trafficways.

2. Residential areas should be so located as to facilitate access to working areas, shopping facilities, and public community facilities.

3. Residential areas should be so designed as to induce desirable aesthetic responses.

4. Residential areas should be developed in accordance with varying density ranges--the higher densities being most proximal to public transit, to major trafficways, to working and shopping areas, and to public open spaces, and being located on lands of highest real value.

5. Population density standards should be translatable into standards of open space, building coverage and building height ratios offering the widest range of flexibility for the achievement of the highest quality in functional and aesthetically pleasing design.

6. Where possible, major thoroughfares, green strips, or topographical barriers should be used as peripheral devices to delineate residential areas.

7. Residential areas should contain only those non-residential land uses pertaining to the day-to-day needs of the residents.

8. The city-wide distribution of small, convenient shopping centers, elementary schools, parks, and playgrounds should roughly follow the area patterns laid out by major thoroughfares and other barriers.

Standards. The population density standards which are prescribed for the plan are as follows:

| Density Range | Persons per Net Residential Acre |
|---|---|
| Low Density..... | 1 to 30 |
| Low-Medium Density..... | 31 to 50 |
| High-Medium Density..... | 51 to 80 |
| High Density..... | 81 to 125 |

With these population density standards established the derivation of concomitant dwelling density standards for each range would be a relatively simple matter, if the population density ranges were to develop in homogeneous dwelling types, viz., all low density in single-family dwellings, all low-medium in duplex, all high-medium in 3-5 dwelling unit structures, and all high in larger apartment buildings. However, it is a basic objective of this plan to achieve diversification of dwelling types in order to meet the needs of all age and economic groups within any one residential area. Since this objective reflects a principle relatively new in residential land use planning, precedents for referral purposes are few. And too, since standards developed for other cities utilizing this basic principle represent population density patterns which were tailored to meet the particular residential needs of these communities, their use in translating Berkeley's planned population density figures into dwelling types and intensity of land use is of little value.

Indeed, the large questions of the determination of optimum population density standards and of optimum dwelling unit density standards are still the great unanswered riddles of the city planning and housing fields. No one yet knows with any certainty what the optimum standards may be. Only a modicum of research into dwelling unit design has yet been completed; and the provision of residential facilities for varying age groups, varying income groups, and varying family sizes is presently, at best, a phenomenon of market trial-and-error.

This plan makes no pretense with respect to the efficacy of the proposed density ranges. Because so little is known about desirable densities, because Berkeley's residential development has at least passed the test of market trial, and because the present zoning ordinance is in immediate need of revision, the standards incorporated into the plan are those which have grown out of the studies of existing densities in the city. Thus the plan chooses to err on the side of conservatism, should further study demonstrate that the proposed standards are not the best ones, at best the plan shall have aided in preventing an intensity of development which might later be found to be undesirable; at worst it shall have postponed an intensity of development which might later be found to be desirable. However, and in spite of the fact that the ranges of proposed densities are the same as the ranges which describe existing development, in fact the intensity of development in many areas is only barely sufficient to classify that area within

a given density range. In spite of the fact that the plan represents that area's proposed density as the same as the existing density, the differential between the bottom of the range and the top may be large. Hence, even though the plan is largely proposing a retention of the status quo during the interim period between the time of adoption of the interim plan and the time of adoption of the official plan, it does not propose that the city's development be temporarily halted. What is proposed is that in the absence of more decisive studies of desirable density ranges for families with children, for the retired aged, for unmarried persons, and for the many other types of household groups, the City of Berkeley should prudently err in favor of its present intensity of development. Should the present pattern of ever-increasing density be continued, it will one day be too late to turn back.

As an adjunct to this plan, an architectural study has been undertaken in an attempt to explore the supplementary alternative kinds of standards of open space and dwelling units density which might be developed for each recommended density range. A typical block with its parcel lines was chosen for study, and in a series of four sketches the block was "developed" to the upper limit of each of the four density ranges.

The techniques employed in this study involve a ratio of floor area to total lot area, which increases with each range as the highest density range is approached. Used in conjunction with this ratio is a "building pyramid" device which determines the physical relationship of one building to another.

It is not important here to undertake a detailed description of these techniques or to describe how they were employed, since they comprised just one of several methods which could be utilized to achieve the objectives of this plan. The drawings, which appear in Chapter 7, visually describe the results of these studies.

The important conclusions to be drawn from a study of these plates are these:

1. That it is technically possible to achieve dwelling type diversification and still achieve the planned population density.

2. That dwelling type diversification, so regulated, permits better integration of building masses with the open space around them.

3. That dwelling type diversification, so regulated, yields wide flexibility for achieving building mass relationships which benefit not only the immediate inhabitants of the area but the city as a whole.

4. That it is possible to achieve more open space per dwelling unit.

5. That freedom of choice of residential neighborhood and opportunity for social contact between all age, income, and ethnic groups are enhanced.

6. That fuller utilization of property is possible through the elimination of rigid setback and side-yard requirements.

Another conclusion that may not be drawn from the graphic presentations themselves but which nevertheless seems to be implied is as follows:

7. That sites of wide variety are provided in all parts of the city where many different builders and investors, large and small, could participate in the manner they prefer and for which they are best prepared. This would imply that where so many builders and investors of many different means and talents may have a hand in developing a particular residential area, the residents of that area would probably have to assume much more responsibility for its architectural development. This quite possible could mean the retention of a supervising architect for each residential area to review all plans for proposed structures in the area. The net effect however--and this is the important point--is that the people of the community themselves would have a direct hand in seeing that the proposals of their general plan were effectuated as originally intended.

Proposals of the Interim General Plan

The Interim General Plan proposes that all lands east of San Pablo Avenue with the exception of the Central Business District, the University and its appurtenances, parks, public open spaces and shopping centers be reserved for residential use. Also to be set aside exclusively for residential use are those lands west of San Pablo but east of Sixth Street, between Dwight Way and the Albany line with the exception of a small area bounded by the Albany line, Sixth Street, Eighth Street, and Camelia Street. This land is a portion of the proposed industrial area.

It is proposed that the areas so described be dev eloped within four ranges of population density:

| Density Range | Persons per Net Residential Acre |
|---|---|
| Low Density..... | 1 to 30 |
| Low-Medium Density..... | 31 to 50 |
| High-Medium Density..... | 51 to 80 |
| High Density..... | 81 to 125 |

High Density Areas. High density areas are proposed for the area contiguous to the northern limits of the University campus and the Central Business District and that area lying coincident with the southern boundary of the campus, south to Dwight Way, and abutting the Central Business District to the west.

These areas will provide for a greater proportion of small, low-maintenance units within easy access to the major cultural and commercial facilities of the city, tha major transportation routes and the rapid transit system. It is anticipated that this area of intensive use will be attractive to home-seekers within the older age groups and to white-collar commuters as well as to single students and to childless student-couples seeking temporary quarters during their stay at the University. University housing facilities for students, such as dormitories and boarding houses, will also be accommodated within these areas.

High-Medium Density Areas. It is proposed that an almost continuous band of high-medium density use form a "horseshoe" around the University, the Central Business District, the Civic Center, the high school and the high density areas. This horseshoe is transformed into a Y by a further band of high-medium density use extending westward on either side of University Avenue to a

Table 1

EXISTING POPULATIONS AND PLANNED HOLDING CAPACITIES OF AREAS WITHIN THE PROPOSED DENSITY RANGES OF THE INTERIM GENERAL PLAN

| Residential Area[1] | Acres | Existing[2] Population | Proposed[6] Holding Capacity |
|---|---|---|---|
| 1 | 29.6 | 877 | 1,480 |
| 2 | 1,016.2 | 18,569 | 30,486 |
| 3 | 7.2 | 180 | 360 |
| 4 | 5.0 | 76 | 250 |
| 5 | 12.0 | 169 | 600 |
| 6 | -- | 498 | -- |
| 7 | 793.0 | 33,309 | 39,650 |
| 8 | 32.7 | 2,730 | 2,616 |
| 9 | 45.4 | 1,289 | 3,632 |
| 10 | -- | 3,364 | -- |
| 11 | 41.6 | 2,544 | 3,328 |
| 12 | 335.8 | 17,939 | 26,864 |
| 13 | 24.9 | 1,486 | 1,992 |
| 14 | 19.2 | 552 | 960 |
| 15 | 50.1 | 4,602 | 6,263 |
| 16 | 55.1 | 6,697 | 6,888 |
| 17 | 3.4 | 90[3] | 90 |
| 18 | 3.0 | 204[4] | 204[5] |
| 19 | -- | 2,365 | 2,000 |
| 20 | 30.7 | 1,158 | 1,535 |
| 21 | 225.2 | 10,017 | 11,260 |
| 22 | 209.6 | 3,745 | 6,288 |
| Total | 2,939.7 | 112,460 | 146,746 |

[1]See Plate 10.

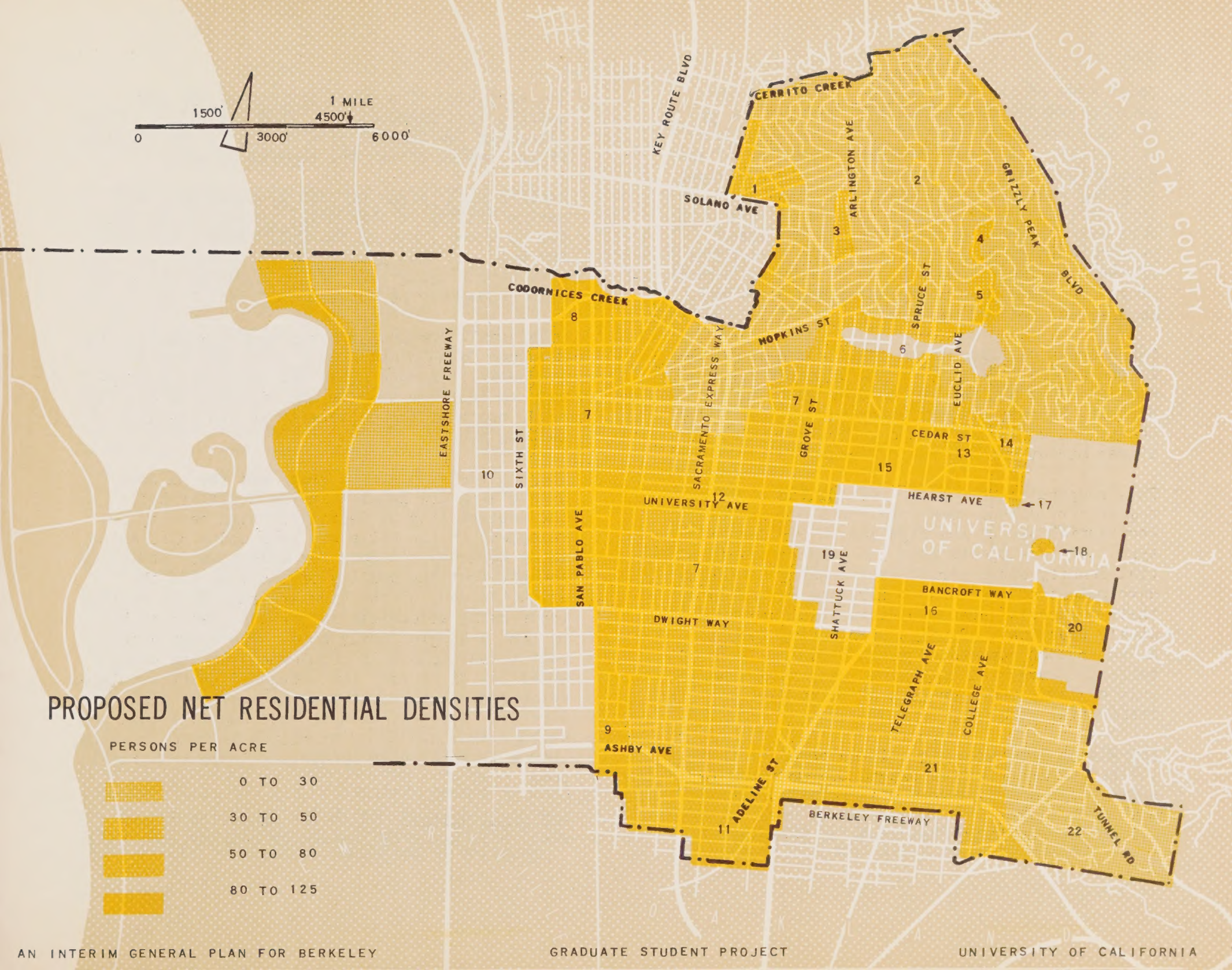
[2]Preliminary count of the Seventeenth Census of Population, 1950. Final count, yielding 113,805 persons, is not yet available for local areas within the city.

[3]Stern Hall, University of California--population fixed by regulations or practical capacity.

[4]Bowles Hall, University of California--population fixed by regulations or practical capacity.

[5]Central Business District--estimated population to be housed in apartments over non-residential uses, residential hotels, etc.

[6]Proposed Holding Capacity figures have been derived by multiplying the Acreage of each numbered Residential Area by the maximum of the appropriate density range indicated in Plate 10, opposite.




AN INTERIM GENERAL PLAN FOR BERKELEY

GRADUATE STUDENT PROJECT

UNIVERSITY OF CALIFORNIA

point west of San Pablo Avenue. The city-wide pattern of this area makes full utilization of the main routes of travel, both intra-city and inter-city. It brings a large proportion of the population within direct access of the principal shopping centers, the Civic Center, and the Central Business District. It is assumed that this area and the other high-medium density areas mentioned below will provide a large percentage of the dwelling accommodations of working couples, single men and women, couples within older age groups, and retired persons.

Other areas of high-medium density are proposed in the general vicinity of the Berkeley Freeway and San Pablo Avenue; in the area south of the Berkeley Freeway between Sacramento Street and Shattuck Avenue; and in the general vicinity of Gilman Street and San Pablo Avenue.

This proposal suggests the reclamation of large segments of ribbon commercial development for residential use of the high-medium residential type. It is supposed that the proposed residential density would permit sufficiently intensive development of the land to make the reversion of these commercial areas to residential use financially practical. Studies of existing land use in the ribbon commercial areas shows evidence of marginal commercial operation, many vacant parcels of land, and a nucleus of multi-family residential structures.

Low-Medium Density Areas. It is proposed that a low-medium density area extend out from the Y-shaped high-medium area and surround the other high-medium areas. This area is to cover almost all of the remaining flat lands of Berkeley with the exception of a small portion of the low density area meandering in from the hills. This intruding low density area occurs in the vicinity of Sacramento Street and Hopkins Street.

Another small piece of land proposed for low-medium density is that which is located between the northern limit of the California School for the Deaf and that portion of the present University campus lying east of the stadium, which the plan recommends be annexed to Tilden Park.

Other small low-medium areas are proposed in the Thousand Oaks-Solano Avenue area; the Euclid Avenue-Keith Avenue area; and the areas contiguous to the high density and high-medium density areas north of the University in the vicinity of La Loma Avenue.

The Euclid-Keith Avenue areas and the La Loma Avenue area are located in the Berkeley Hills. The desirability of relatively high density development in the hills has been under discussion among Berkeley citizens for some time. It is thought that the quality of the area and the attractiveness of the view are such as to warrant their being accessible to persons unable to buy or rent a single-family home. The major deterrent to multiple-unit development in the hilly areas is, of course, the increased traffic volumes which would be generated on the narrow, winding streets. However, because both Euclid Avenue and Keith Avenue are to be developed as major streets, they will be able to handle the increased traffic load.

Low Density Areas. With the exception of the small hill areas of low-medium density, mentioned

above, it is proposed that the entire hill section in the northeast portion of the city be developed in low density residential use.

A second section proposed for low density use occurs in the general vicinity of Claremont Avenue and Ashby Avenue.

The first area mentioned consists of very hilly and rugged terrain. The streets follow the contours and, of necessity, are narrow. Residential use of high intensity in this area would create circulation and vehicle storage problems. The area if presently developed almost entirely in single-family structures of high quality.

The Claremont district at the present time is developed in very large single-family homes of the highest quality. The existing density of that portion of the Claremont district west of Claremont Avenue is the lowest in the City.

Summary of the Proposals. In general, the interim plan envisages that residential development will continue to be of relatively low intensity. The largest portion of the city is to be developed in low or low-medium density use; but an appreciable portion is to be developed in high or high-medium density use. It is proposed that the density pattern which is recommended will provide living accommodations of good standards for a large variety of population groups. The location of the higher density areas will facilitate access to both surface and rapid transit lines, and will facilitate access to the major centers of employment and cultural activity. The net balance of the plan is to maintain the hometown residential character of Berkeley while at the same time giving due recognition to the fact of the city's maturation as a central city of the metropolitan area.

The city's largest single activity, the University, is continued as the residential focus of the city. The developing industrial area is recognized as a secondary focus. The satellite relationship of Berkeley to San Francisco and Oakland is recognized by the provision of high density developments along the major routes to these two centers.

But the major recommendation of the plan is that a holding capacity for the city be established and maintained. It is proposed that no more than 150,000 persons shall live in Berkeley; this 32 per cent increase over the 1950 population is evident, and the plan proposes to accommodate this many persons comfortably and wholesomely by the proper provision of public and private services. Moreover, it proposes to accommodate this potential population increase without greatly altering the existing density pattern and by absorbing the new residents throughout a large percentage of the city's area.

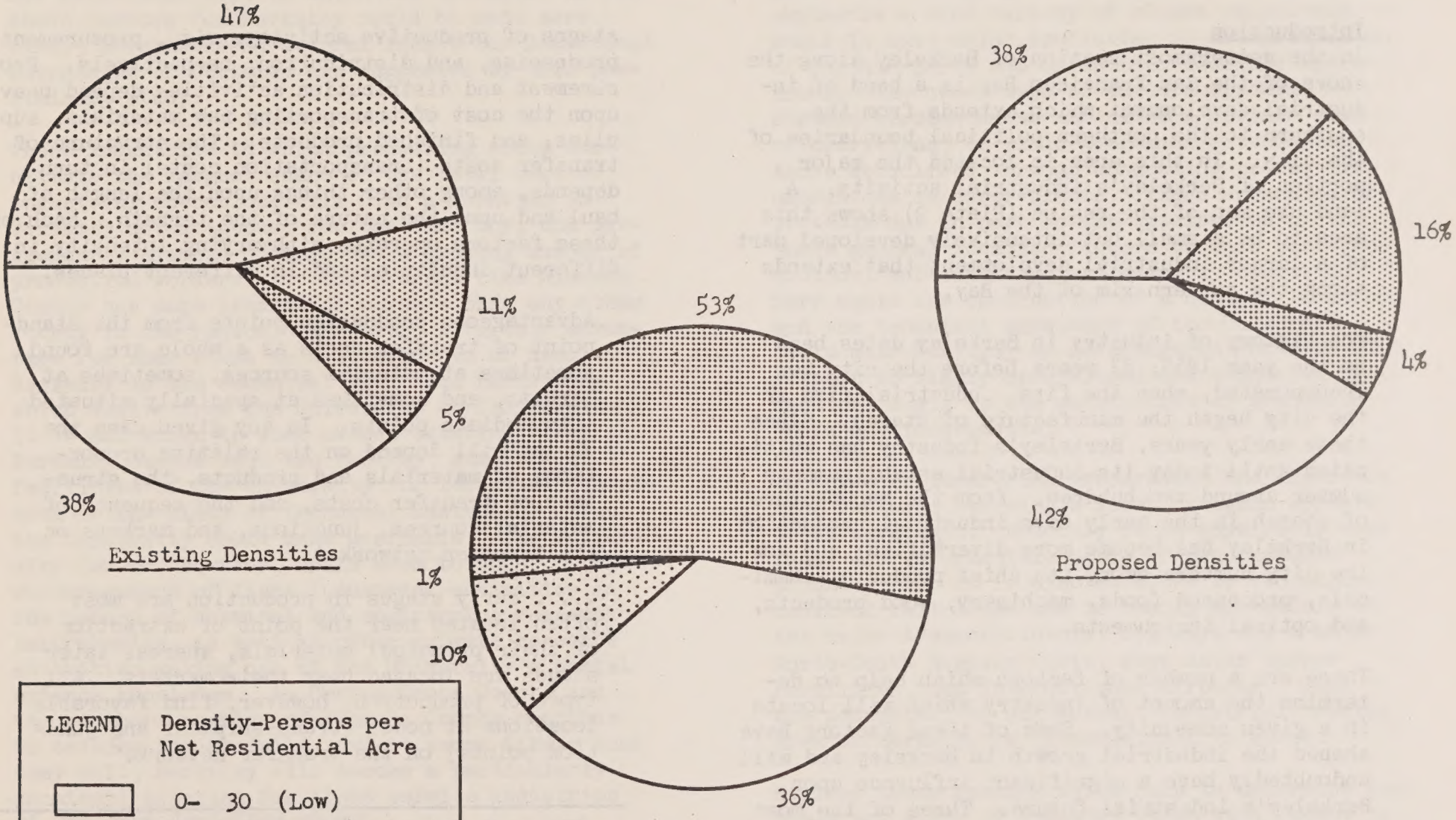
The density patterns which will eventuate from the plan are to be a reflection of a heterogeneous admixture of building types. Thus, where low density areas have traditionally comprised only single-family residential structures, it is proposed that duplex, small multiple-unit structures, and even apartment houses shall be allowed, providing that appropriate standards of open space be observed. In accordance with the program which is envisioned, the zoning ordinance which would effectuate this plan would allow a builder to

construct any type of residential structure in any area of the city provided that the lot is sufficiently large as to yield a lot-density which is not in excess of the density proposed for the specific district. In this manner, persons of all incomes and families of all ages and sizes would be accorded the widest range of choice with respect to the area of the city in which they may choose to live.

The net effect of the plan, then, can be to help to assure that Berkeley shall remain a city of homes while at the same time taking its proper place in the metropolitan core. It can achieve these ends without the typical overcrowding usually associated with central cities; it can achieve these ends without sacrificing the economic and cultural attributes usually associated with central cities. Moreover, it can retain its role as the home of a true cross-section of the Bay Area's cosmopolitan population.

Chart 8

SUMMARY OF EXISTING DENSITIES, ALLOWABLE DENSITIES UNDER BERKELEY ZONING ORDINANCE, AND PROPOSED DENSITIES, AS PERCENTAGES OF RESPECTIVE TOTALS




SOURCES: Berkeley City Planning Department

Derived from Berkeley Zoning Ordinance

## D. INDUSTRIAL AREAS

Introduction

In the westernmost section of Berkeley along the shore of the San Francisco Bay is a band of industrial development which extends from the southern to the northern political boundaries of the city. In this area is located the major portion of Berkeley's industrial activity. A land use map of the region (Plate 2) shows this area to be a small but intensively developed part of a larger industrial development that extends along the eastern rim of the Bay.

The history of industry in Berkeley dates back to the year 1855, 23 years before the city was incorporated, when the first industrial firm in the city began the manufacture of starch. Since these early years, Berkeley's industry has multiplied until today its industrial establishments number around two hundred. From the manufacture of starch in the early days industrial production in Berkeley has become more diversified; and now the city numbers among its chief products, chemicals, processed foods, machinery, wood products, and optical instruments.

There are a number of factors which help to determine the amount of industry which will locate in a given community. Some of these factors have shaped the industrial growth in Berkeley and will undoubtedly have a significant influence upon Berkeley's industrial future. Three of the most important determinants in plant location are (1) the location of raw materials, (2) the location of a labor supply, and (3) the location of the market; these correspond with the three stages of productive activity, viz., procurement, processing, and distribution, respectively. Procurement and distribution activities depend heavily upon the cost of transporting raw materials, supplies, and finished products. The structure of transfer costs (transportation costs) in turn depends, among other things upon the length of haul and upon the nature of the terrain. Each of these factors operates with varying intensity in different industries and in different places.

> Advantageous production points from the standpoint of transfer costs as a whole are found sometimes at material sources, sometimes at markets, and sometimes at specially situated intermediate points. In any given case the choice will depend on the relative proportions of materials and products, the structure of transfer costs, and the sequence of material sources, junctions, and markets on the transfer network.[1]

> . . . early stages in production are most often located near the point of extraction of their principal materials, whereas later stages are located near their markets. All types of production, however, find favorable locations at nodes (trans-shipment and junction points) on the transfer network.[2]

---

[1]Edgar M. Hoover, The Location of Economic Activity, McGraw-Hill Book Co., Inc., New York, 1948, p. 47.

[2]Ibid., p. 116.

Although a thoroughgoing economic base study has not been conducted, in which the operation of the above factors for Berkeley could be made more clear, nevertheless, several industrial locational advantages of Berkeley are suggested by this preliminary study.

Those industries in which processing costs constitute the largest share of the total cost of industrial operations will find a location in Berkeley advantageous; for the East Bay, and particularly Alameda County, has a growing number of production workers. At the present time Alameda County has more production workers than any other county in the region. Moreover, a further advantage for some firms to a location in or near Berkeley is the technical skill and facilities which derive from the University of California. It is not known to what extent existing firms in Berkeley depend upon the faculty, students or facilities of the University for technical assistance or the kinds of technical assistance which the University could make available. The University factor, however, would seem to point to the encouragement of light industrial activities in the nature of chemical and engineering research laboratories, as well as other private research activities making use of the University's social science knowledge. As Contra Costa County and the southern portion of Alameda County continue to develop industrially, and it seems likely that they will, Berkeley will become a particularly strategic location for light service industries of the kind described above.
Moreover, there are several indicators which suggest that industrial enterprise, if taken in the aggregate, may be beginning to abandon the superplant in which parts-production, sub-assembly, and assembly operations are combined in a single area. The emerging industrial pattern seems to emphasize a wide variety of plants relatively small in size which specialize in the production of certain parts and on certain assembly operations. The newer type of pattern appears, in certain circumstances and after a certain size of operations, to yield economies outweighing those actualized through congealing productive operations in super-plants. These economies are probably due in part to the application of the three general location factors to each part-production, sub-assembly, and assembly operation. Here again the combination of a central location and the technical knowledge of the University could make Berkeley an advantageous location with respect to highly specialized and technical production, e.g., in the manufacture of precision tools and instruments.

In terms of industrial procurement and distribution factors, Berkeley's location again appears to be strategic. Not only is it physically near final and intermediate users of manufactured products, but it is also serviced by two major national rail lines and is easily accessible to two major transcontinental highways and a major North-South highway route, deep water harbor facilities, and international airports. Thus the potential, if not actual, industrial trading area of Berkeley is international in scope.

Besides those factors which help to determine the scale and kinds of industry which will locate in Berkeley, there are still other factors to consider in planning industrial areas, viz., the kinds and scale of industry that are most desirably located in Berkeley from the citizen's point

of view. Here it is necessary to consider industry not only in terms of providing a decent neighbor to the residential areas, but also, and more importantly, in terms of maintaining a high level of employment, a high standard of living, and a sufficiently large tax base to support the projected improvements of the city. Most important of the above are a high level of employment and a high standard of living.

There is little question regarding the limited effectiveness of the efforts of the individual community to insure full employment and a high standard of living. Such important problems are the result of forces which are of national or international scale. But the individual community must nevertheless attempt to accomplish what it can on a limited local basis. Therefore, it is necessary to undertake an analysis generally of the extent to which existing industry in Berkeley is subject to seasonal and cyclical economic fluctuations. This will in turn help in a consideration of the types of industries which should be invited to locate in the city. The types of industry which are to be encouraged in Berkeley should also be dependent upon the occupational skills, age, and sex distribution of the population. Unemployment statistics, by occupation, if possible, should be gathered and the selection of new industries for location in Berkeley should be geared in part to the kinds of unemployment which exist in the city.

The foregoing factors are only some of the major considerations in the planning of industrial areas. In the final analysis, however, the scale and kinds of industrial establishments that will locate in Berkeley are dependent upon the decisions of private business enterprise itself. In a private enterprise economy, industrial output, investment, and location decisions are diffused among numerous autonomous business units. The coordination of the decisions of these business units is achieved not by local governments, but in an ex post facto manner through the operation of the mechanism of price movements. Consequently, much of the theorizing of economists and others concerned with economic activity has centered around the determinants of prices (commodity and service prices including transfer prices) and their relation to various types of market structures. Much of the effort of economists in this country has been expended in an attempt to describe the way in which the private enterprise economy functions. The conclusion at which most of them have arrived is that the economic system in large part adjusts automatically to disturbing influences such as changing resources and needs. Intervention in economic affairs by governmental bodies is, in the main, unnecessary, for the system guides itself. Still other theorists maintain that the economy periodically becomes maladjusted at which times it is necessary for governmental bodies to employ certain monetary measures to bring the industrial system back to a more prosperous level.

In both cases two things have been left largely untouched: (1) an analysis of the ways in which the different segments of the industrial system are interdependent in terms of the quantities and kinds of goods and services which are exchanged, and (2) the determination of the optimum geographical location of different industrial facilities, based upon the knowledge obtained from the analysis of the exchange of goods and

services. Yet such an analysis and determination constitutes a large portion of the central core of the problem of planning local industrial areas. The other portion of this core is the investment, output, and location decisions of the numerous business units. Even if such an analysis and determination, as mentioned above, were completed, there would be no assurance that the independent business units would adopt the conclusions following therefrom.

Thus, the problem of estimating future industrial growth in Berkeley takes essentially the form of predicting the decisions that business enterprise will make. In this study an assumption, regardless of how tenuous, has been made that business enterprisers will act in the same manner as they have acted in the past with respect to the expansion and location of industrial firms.

In an attempt to establish a preliminary working basis for planning the industrial areas of Berkeley, investigation has been primarily limited to (1) an estimation of the scale of additional industry which could be expected to locate in Berkeley and (2) a determination of the areas in which industry should be located. The refinement of the data and estimates presented here together with an analysis of the factors mentioned above must await a more detailed investigation.

The general line of study here has been initiated with an investigation of the regional context within which Berkeley's industry is operating, since Berkeley's economy is but a part of the larger regional economy. Proceeding from the larger context of the Bay Area, the discussion will then be focussed upon the industrial land use problems of Berkeley itself.

The Regional Context

The 1947 Census of Manufactures lists the principal industrial counties of the Bay Region as Alameda, Contra Costa, and San Francisco. Among the most important classes of industries in the region, as evaluated in terms of the numbers of production workers in each, are those classified as: food and kindred products, canning and preserving, apparel and related products, printing and publishing, chemicals and allied products, petroleum and coal products, primary metal and fabricated metal products, machinery, and ship and boat building and repairing.

The most important industries in Alameda County, in terms of the number of production workers and in terms of the value added to the product by the manufacturing process, are food and kindred products, chemicals and allied products, fabricated metal products, machinery, and transportation equipment.

In the year 1949 there were approximately 27,000 acres of industrially occupied land in the Bay Region.[3] About one-third of this acreage was located in Alameda County.

[3]This figure is derived from data on the number of acres zoned for industry and the number of acres of vacant industrially zoned land which appear in the report by Robert P. Danielson, Industrial Locations in the San Francisco Bay Area, Bay Area Council, Inc., San Francisco, 1949, p. 48. The figure includes some non-industrial uses in addition to industrial uses, but it is the closest approximation that is presently obtainable.

In the period from 1939 to 1947 San Francisco and Alameda counties were the leading industrial counties in the Bay Region. In terms of both the number of manufacturing establishments and the value added by manufacture, San Francisco was the leading county in 1947; but in terms of the number of production workers, Alameda County led the region in the same year.

Trends of growth during this period paint a slightly different picture. Measured in terms of the percentage increases in the value added by manufacture and in the number of production workers from 1939 to 1947, Alameda County's rate of growth far exceeded that of San Francisco.

It appears that, insofar as production workers are a measure of industrial activity, Alameda County is the most important industrial county in the Bay Region; and before many years it will probably surpass San Francisco in the value added by manufacture. With the continued industrial development of Contra Costa County, Berkeley may well come to find itself in the geographical center of the greatest concentration of industry in the region.

In 1939 Alameda County had 23.9 per cent of the manufacturing establishments in the region, accounted for 30.6 per cent of the region's value added by manufacture, and had 30.7 per cent of the production workers in the region. By 1947 the county had gained in all three respects, having 27.3 per cent of the region's establishments, 34.1 per cent of the value added, and 35.8 per cent of the region's production workers.

The industry of the region is predominantly located along the shores of the San Francisco, San Pablo, and Suisun Bays. The primary determinants of this pattern of industrial development have been in large part the topography and the location of rail lines, highways, and port facilities.

Industry in Berkeley

If one is accustomed to large factory sites such as are found in Chicago, Cleveland, Philadelphia, and some of the larger industrial centers of the United States, Berkeley's industry would indeed seem small in comparison. Here one does not find the gigantic, sprawling, industrial plant that can be found in other cities; on the contrary, one of the outstanding characteristics of the industry in Berkeley is the relatively small and compact nature of most of the factory sites. This characteristic of Berkeley's industry is due in large part to the types of industries which have elected to locate in the city and in part due to the relatively small size of the parcels which have been available for sale.

The city's industry can also be generally characterized by the type of products that are manufactured. Here there is a relatively greater percentage of technical and quasi-technical laboratories which manufacture chemicals and engineering and optical equipment. Here, too, there is an emphasis on the processing of food products, and on the manufacture of machinery and of printed materials.

Both the sizes of the plants and the manufacturing processes that take place within these plants contribute to the appearance of the industrial area as a whole. In the general area west of San Pablo Avenue many of the factory buildings are rather

well kept and neat in appearance; some are modern in design and maintain a certain amount of landscaping around those portions of land nearer the streets. One of the most striking visual characteristics of this area is the extent to which residential and other non-industrial land uses are dispersed among the industrial uses. While showing signs of considerable age, the residential structures are fairly neat in appearance. However, in all probability a great number of these residential structures will reach the end of their usefulness within the next twenty years.

The number and types of industries which are located in the general area west of San Pablo Avenue, together with the presence in some cases of extensive non-residential uses, contributed to a general feeling that the area is intensively developed. An attempt will be made to gauge the intensity of this development in a later stage of this discussion. A brief look may be taken of the more statistical side of the industrial picture before turning to the problem of estimating the future industrial land requirements of the city.

In 1947 the industrial establishments in Berkeley employed about 11 per cent of the production workers in the county of Alameda, comprised about 15 per cent of all establishments in the county, and contributed about 13 per cent of the value-added-product. Berkeley was the second most important city in the county in 1947, when evaluated in terms of the number of manufacturing establishments and in terms of the value added by manufacture; but it ranked third in terms of the number of production workers, the City of Alameda taking second place. Oakland led in all three respects. In the period 1939-1947, Berkeley's rate of growth ranked third in all three categories.

The Industrial establishments in Berkeley occupy approximately 276 acres, constituting about 3 per cent of the industrially-occupied land in Alameda County and about 1 per cent of the industrially built-up land in the entire Bay Region.

There are approximately 200 industrial establishments within the city limits of Berkeley. Most of these are concentrated in the area west of San Pablo Avenue within the approximate area prescribed by the M-District of the Berkeley Zoning Ordinance (see Plate 4). There are a number of other industrial establishments concentrated along the Santa Fe Railroad lines, in the Central Business District, and some at the junction of Shattuck Avenue and Adeline Street. A scattering of industrial land uses occurs in various other parts of the city as well.

The principal industrial employer in Berkeley is the chemicals industry; in second rank is the foods industry. Together they account for over 50 per cent of the industrial employment in the city.

Studies of the existing land use patterns indicate that the foremost issue involved in industrial planning for Berkeley is that of determining the amounts of land and the sizes of parcels to reserve in order to meet the requirements of the city in the future.

## A Projection of Berkeley's Industrial Land Requirements

Acreage. It has been indicated that industrial activity can be measured in terms of (1) the numbers of industrial establishments, (2) the

value added by manufacture, and/or (3) the numbers of production workers employed. The Bureau of the Census uses all three gauges and publishes data for each in its Census of Manufactures, the reason being that there is no single, clear measure of industrial activity. Each of these factors reflects a specific aspect of the scale of production; none reflects a complete picture; and each has its limitations. The number-of-establishments scale does not take into account the varying sizes of those establishments. The value-added-by-manufacture reflects the fluctuations in market prices and the relative values of different classes of goods, but it does not necessarily reflect the scale of operation of the manufacturing process. The number-of-production-workers-employed may suggest the scale of operation, but may give a distorted picture of those industries which employ major labor-saving devices or which are largely automatic in their operations.

To employ any one of these measures alone in any thorough analysis is to limit the utility of the conclusions which that analysis yields. However, the number of employees index is deemed to be of greatest pertinence to this specific study, because of the more severe limitations of the other two indicators. It is therefore employed in this preliminary study as the primary basis for measuring industrial trends in the region and for calculating the industrial land requirements of Berkeley for the future. The estimates and calculations have been subjectively tempered by considerations of the other factors; nonetheless, the conclusions reached here are subject to major limitations and must consequently be regarded as being extremely tentative.

In order to estimate the scale of industrial activity in Berkeley in the future, it is first necessary to make a general estimate of the scale of industrial activity in the Bay Region in the future. A crude estimate of future Bay Region activity can be derived by projecting Bureau of the Census data for production workers in the years 1919 and 1947 on a straight-line basis to some future date. These projections have been made for each of the nine counties of the region, projected to the year 1970.

Based upon information gathered by Robert P. Danielson,[4] a ratio may be established between the number of production workers in each county and the amount of industrially built-up land in each county for the year 1949. Then, assuming that the same ratio between production workers and industrially built-up land will hold for the year 1970, the acreage that will be required by that year is determined by applying the 1949 ratio to the projection of numbers of production workers for the year 1970. In this manner it is estimated that the various jurisdictions in Alameda County will need to provide 2,200 additional acres of land for industrial use by 1970.[5]

---

[4]Robert P. Danielson, op. cit., p. 48.

[5]Projections for the other counties in the region are recorded in Table 20 of the Appendix to this report.

It was intended that, based on these calculated estimates, should any county require a greater acreage for industrial use in 1970 than the present acreage of industrially zoned vacant land, then the difference between the two acreage figures would be prorated among the various counties on the basis of

Based upon the foregoing assumptions and applying the same straight-line projection technique used for the county projections, an estimate of the number of production workers in Berkeley may, in turn, be obtained. In the years 1919 and 1949 there were approximately 2,300 and 6,500 production workers respectively. A straight-line projection from these two years yields an estimate of 9,500 production workers for the years 1970-71 in the City of Berkeley.

An analysis of the acreages in various land uses in Berkeley reveals that there are presently 276 acres of industrially developed land in the city. By applying the present ratio of production workers to industrially built-up land (6,500/276) to the estimated figure of 9,500 production workers in Berkeley for the years 1970-71, it is estimated that some 403 acres of industrial land will be needed in 1970-71 (or 127 acres, 46 per cent over and above the present acreage devoted to industrial use) to meet the estimated industrial trend in the city.

Again it must be emphasized that there are very definite limitations to the above figures. With more thorough study the range of error might be reduced.

Location. It has been indicated in Chapter 3 above that the early industrialists who located their plants in Berkeley chose sites which were generally

---

the respective percentages of the regional total of industrial acreage developed in the last ten years. It is fully recognized that this technique has serious limitations, but it is felt that the procedure is justified in view of the fact that a regional planning agency does not as yet exist, which would determine, by thorough-going research, the optimum distribution of those industries which locate within the nine-county area.

It was found that each of the counties did have sufficient vacant land to accommodate any expansion of industrial activity which could be anticipated through the utilization of the foregoing technique, and the adjustments were therefore unnecessary. The reasons for describing the technique are twofold: (1) an expanded analysis, if feasible at some future date, may take into consideration the number of establishments and the value added by manufacture in estimating future

---

regional industrial requirements and can be facilitated by the use of the procedural framework established here, and (2) the utility of the conclusions regarding Berkeley's future industrial requirements is more definitely established.

It was not feasible, in turn, to carry these calculations to each city within Alameda County because of the absence of data on the amounts of industrially developed land in each city. In view of this difficulty, it is assumed that all cities in the county, other than Berkeley, have a sufficient amount of vacant land suitable to meet the 1970 need. This assumption eliminates the possibility that Berkeley will become the receiver for any overflow which would be the concomitant of a deficiency of suitable land available for industrial development in any of the other cities in the county.

in the area west of San Pablo Avenue and east of the Bay's shore. This early development was followed by further industrialization of that area, and in 1920 by the official designation of a portion of that area as the manufacturing zoning district in the city's zoning ordinance. In many respects this land use pattern has been a highly desirable one.

The Southern Pacific Railway main-line tracks which run along Third Street were probably the major attraction to incoming firms in the early period of industrialization, since they offered ready access to the major markets of the nation and when supplemented with a system of spur tracks, reduced loading and unloading costs. With the recent development of extensive highway transport, the proximity of the Berkeley industrial area to the Eastshore Highway likewise makes possible easy access to two major cross-country highways and the major north-south highway routes (U.S. Highways 40, 50, and 101, respectively). The Oakland and San Francisco seaports are within easy rail or truck shipping distance, both being accessible via close-at-hand highways and rail lines. The terrain of the Berkeley industrial district is very flat. Subsurface soil conditions are such as to be capable of supporting large loads without the necessity of expensive construction. These factors have also been operating to shape the industrial development in the entire East Bay. The resulting pattern has been a concentration of industry along the bayfront and has made Berkeley's location strategic with respect to the location of industrial service industries which are able to serve the producing industries on the north and south. The characteristics of the north-south East Bay circulation pattern are such as to make for relatively easy travel for industrial employees between their homes and their places of work. In all these respects, the Bayshore industrial development has been an adventitious one. Insofar as it is on the windward side of the East Bay residential development, it is an unfortunate one; but it may be anticipated that solutions to the problem of air-pollution are forthcoming. Much of the odor which presently annoys the Berkeley citizen is generated in San Francisco and by the decay of organic materials in the Bay waters. This latter factor will soon be largely eliminated by the completion of the new East Bay sewerage system.

This study has concluded, upon the basis of the considerations listed above and largely in view of the large-scale investment in industrial plant within the San Pablo-Eastshore Highway belt, that the industrial land development which has occurred as a consequence of the locational decisions of industrialists has created a highly desirable land use pattern which ought to be retained in its general form, i.e., that the area west of San Pablo Avenue is in general the area which should be reserved for industrial use in the future.

But it is necessary to determine the most desirable location for industrial development within the general San Pablo-Eastshore Highway belt. A series of maps has been prepared, designed to answer the following questions with respect to this larger issue:

1. What is the present extent of physical industrial development in each of the blocks within this general area?

2. Where is the vacant land in the area?

3. What is the extent of the non-industrial land use in the area?

4. What is the existing distribution of industrial employees in Berkeley?

For the sake of brevity only a generalized version of the maps dealing with questions 1 and 4 are included here (Plate 11).

It is apparent that the heaviest industrial development has occurred in the area bounded on the east and west by Sixth Street and the Eastshore Highway, respectively, and on the north and south by the political boundaries of the city. Two additional segments extend east of Sixth Street at the northern and southern ends of the district. The northern segment is bounded on the north by the political boundary of Berkeley, on the south by Camelia Street, and on the east by Eighth Street. The southern segment is bounded by the political boundary of the city on the south, Dwight Way on the north, and San Pablo Avenue on the east. These segments are serviced by railway spur tracks. In a rough sense the greatest concentration of industrial employees is also located in the area described, which is in the area of the present M-District, as set forth in the Berkeley Zoning Ordinance.

A specific analysis of the defined area reveals the following summary figures:

1. 455.78 acres total in the defined area (excluding the Aquatic Park).

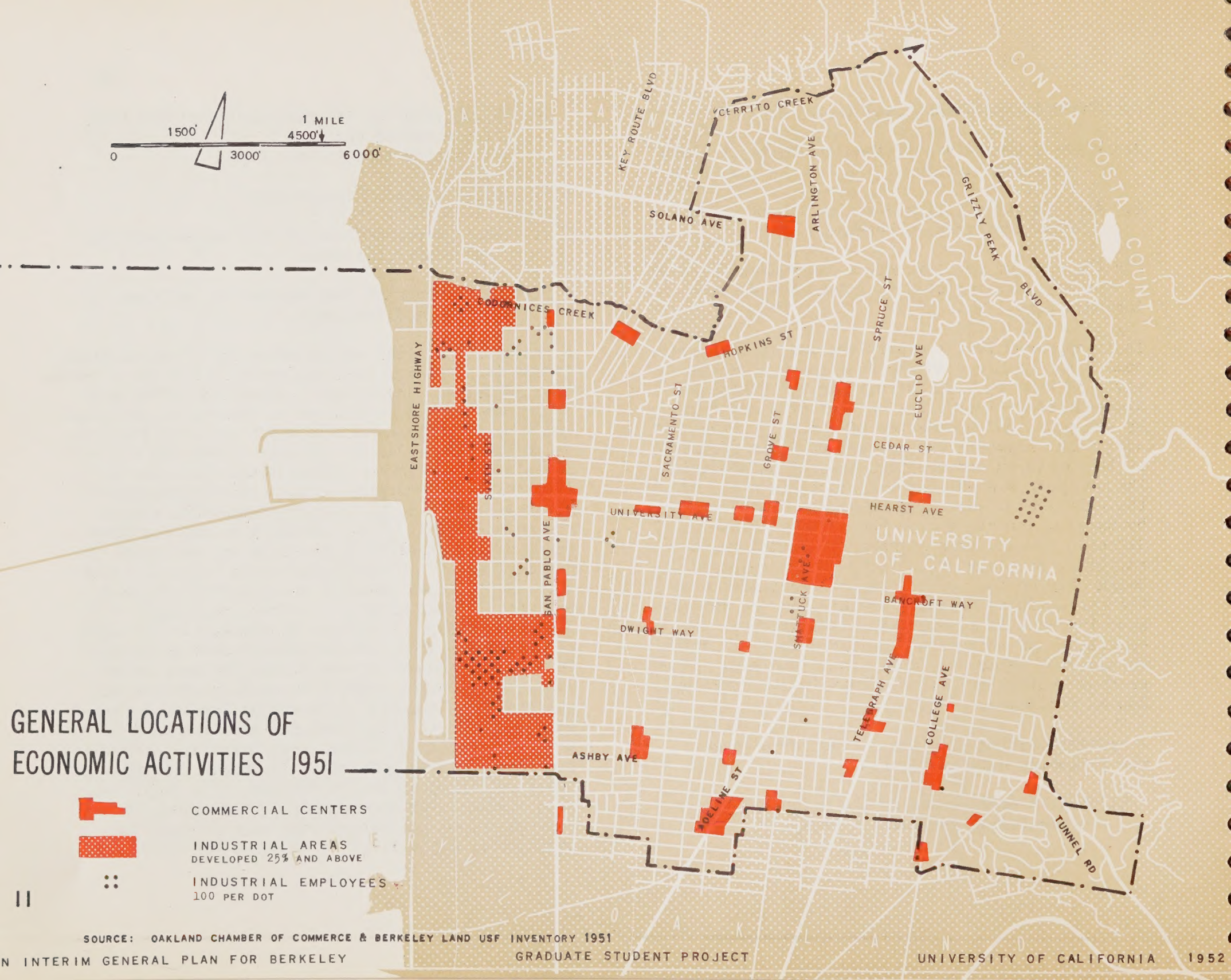
2. 233.96 acres of industrially developed land (or about 88 per cent of all industrially developed land in the city).

3. 103.44 acres of vacant land.

4. 88.58 acres of land devoted to residential and commercial uses.

5. 29.80 acres of land devoted to railroad tracks and terminals.

A projection of land requirements for a consolidated industrial district would necessarily reserve a certain amount of land in the planned industrial area to accommodate those industrial uses which are presently outside that area and which are considered to be undesirably located. An analysis of these uses reveals that there are approximately 42 acres of industrial uses outside of the area defined above which will need to be relocated somewhere within the defined area. Thus, if the area defined above were to be designated in the plan as the future industrial area, 168 additional acres would be industrially developed there by about 1970 (127 acres, estimated normal growth; 42 acres, relocated Berkeley firms). There are approximately 191 acres of land which are either vacant or devoted to residential and commercial use within the area under discussion and which could be used for future industrial development. Subtracting 168 acres from 191, it is found that there are approximately 23 more acres of land in that area than this estimate suggests would be required. Since this estimate is based upon projections to the year 1970 only, and since it would be unfortunate if high-value developments in non-industrial uses were to occur on lands which might later be required for industrial


1500'
1 MILE
4500'
0
3000'
6000'
KEY ROUTE BLVD
CERRITO CREEK
ARLINGTON AVE
GRIZZLY PEAK BLVD
SOLANO AVE
CONTRA COSTA COUNTY
SAN LORENZO CREEK
HOPKINS ST
SPRUCE ST
EUCLID AVE
EASTSHORE HIGHWAY
SACRAMENTO ST
GROVE ST
CEDAR ST
UNIVERSITY AVE
HEARST AVE
SAN PABLO AVE
SHATTUCK AVE
UNIVERSITY OF CALIFORNIA
BANCROFT WAY
DWIGHT WAY
TELEGRAPH AVE
COLLEGE AVE
ASHBY AVE
JOSELINE ST
TUNNEL RD
GENERAL LOCATIONS OF ECONOMIC ACTIVITIES 1951
COMMERCIAL CENTERS
INDUSTRIAL AREAS
DEVELOPED 25% AND ABOVE
INDUSTRIAL EMPLOYEES
100 PER DOT
SOURCE: OAKLAND CHAMBER OF COMMERCE & BERKELEY LAND USF INVENTORY 1951
N INTERIM GENERAL PLAN FOR BERKELEY
GRADUATE STUDENT PROJECT
UNIVERSITY OF CALIFORNIA 1952

use, it would be most prudent to set aside an area of land in excess of the 403 acres indicated. Therefore, the area defined above, which constitutes approximately 426 acres of land (excluding the area devoted to railroads), is substantially the area that is needed.

There are approximately 90 acres of land which are occupied by the Aquatic Park. Should a comparable recreation area be developed in the tidelands, when and if they are filled, then the Aquatic Park might be made available for industrial purposes. This possibility, if actualized, would add a considerable portion of land, if the Park lake were in turn to be filled, to that sum which would be made available in the San Pablo Avenue-Eastshore Highway area. Would this addition mean that there would be more land reserved for industry than Berkeley actually needs in the long run.

A similar question confronted the Cincinnati City Planning Commission, and they had this to say about the planned reservation of industrial land.

> There are several good reasons why more land should be reserved for industrial use than probably will be required. A principal reason is the varying requirements and policies of different types of industries and of different establishments within the same industry type. It is obviously impossible to predict and anticipate these requirements with such precision that the exact land requirements of these establishments can be set aside. To permit various concerns to find a site best suited to their particular operations and policies means reserving at all times a variety of sizes in a variety of locations. Preserving this range of choice means reserving more industrial land than will ever be required. Another reason for reserving more land for industry than will probably be required is that this action is less apt to create an artificial contraction of the supply of industrial land with attendant price rises which might discourage either the location of new industry or the modernization plans of existing industry.[6]

The thinking which guided the development of the Cincinnati Master Plan may, with great merit, be applied to the planning of industrial areas in Berkeley as well. If Berkeley is to meet the demands of industrialists for sites within the city, it will be necessary to set aside more land than estimates indicate will be needed; and, since the estimates made here are based upon 20-year projections only, are extremely tentative in nature, and may not accurately forecast the actual forthcoming demand, it will be necessary to provide acreage in excess of the 403 acres indicated. Besides the Aquatic Park, two additional alternatives present themselves.

One area is that between Sixth Street and San Pablo Avenue and between Camelia Street and Dwight Way. The high quality of the residential development within this area, the recent construction of the new Columbus Elementary School plant, the adequacy of playgrounds and parks, and the community

---

[6]City Planning Commission, Cincinnati, Ohio Industrial Areas, Cincinnati Master Plan Study, June 1946, p. 48.

spirit which the citizens living in this area have actively demonstrated all strongly recommend that the area be reserved for residential development in the future.

The second area lies in the lands presently submerged in the waters of the Bay, which are commonly referred to as the "tidelands". These comprise some 5,000 acres within the city limits of Berkeley. In this area the best section for industrial development appears to be that portion of the tidelands which is adjacent to Emeryville's tidelands.

It is difficult at this point to estimate with precision the amounts of industrial and residential development which should occur on the tidelands. Two of the most important determinants are the cost of fill and the provision of municipal services. It may be that the sum of these two costs would effectively prohibit any extensive residential development. It is conceivable, however, that should the cost prove to be exorbitant, some arrangement could be made to set aside a certain percentage of land for multi-family residential use in every portion of the tidelands that is developed for industrial use as a method of sharing the heavy fixed costs involved in the filling program. Should it prove to be desirable and economical to develop a portion of the tidelands for residential use, then another problem arises with respect to the proposed relocation of the Santa Fe Railway tracks, viz., the conflict between the railroad tracks and the residential development.

It has been tentatively assumed that it might be possible to consolidate the Santa Fe Railway trackage along a portion of the Southern Pacific Company's right-of-way. To achieve this end it may be possible to negotiate some arrangement whereby the city might grant the Santa Fe Railway title to the Aquatic Park and perhaps another section of land west of the present Santa Fe property in the southern portion of the tidelands in exchange for (1) consolidation with the Southern Pacific Company trackage north of University Avenue and (2) an area of land in the northern section of the tidelands adjacent to the Eastshore Highway.

More study should be devoted to the whole problem of alternative methods and costs of fill and the significance of the various methods in terms of the types of land uses which can economically be accommodated on the tidelands. Moreover, some study should be devoted to ways and means of consolidating all main line rail trackage passing through Berkeley.

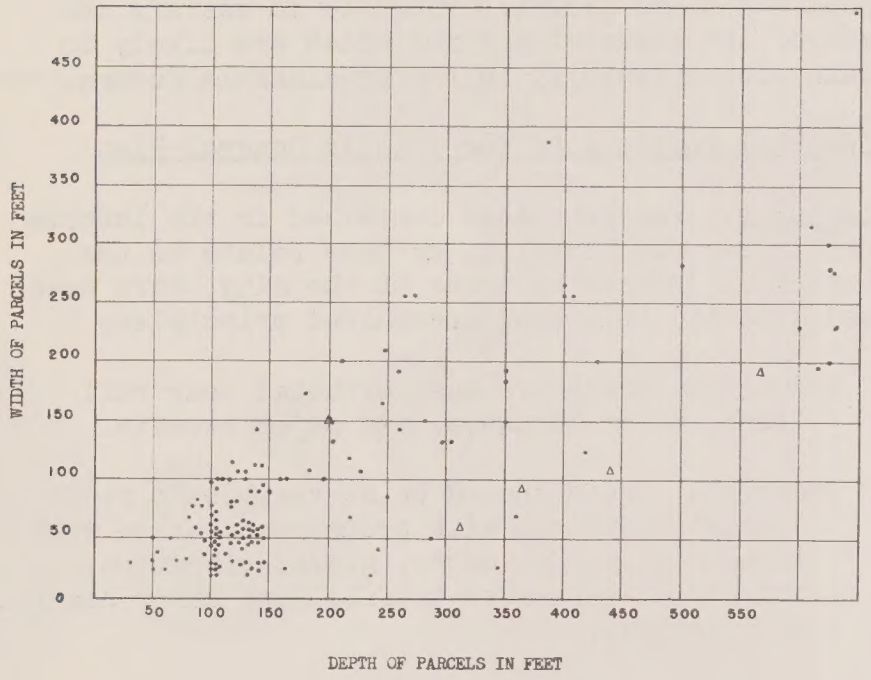
Quality of Land. Following a determination of the amount of industrial land which should be reserved for the industrial needs of 1970, a further problem remains, viz., whether the amount of industrial land required can be provided in adequate quality. The major questions which must be answered here are (1) whether there will be parcels of sufficient size to satisfy the demand, and (2) whether there will be adequate facilities such as access to railroads, water, gas, and electricity. Insofar as this investigation has been extended, the facilities and services appear to be adequate for the anticipated industrial growth. Further investigation will determine the capacities of the water, gas, and sewage mains and the kinds and intensity of industrial use which these capacities can support.[7]

[7] See, for example, Appendix A of Industrial Areas, op. cit.

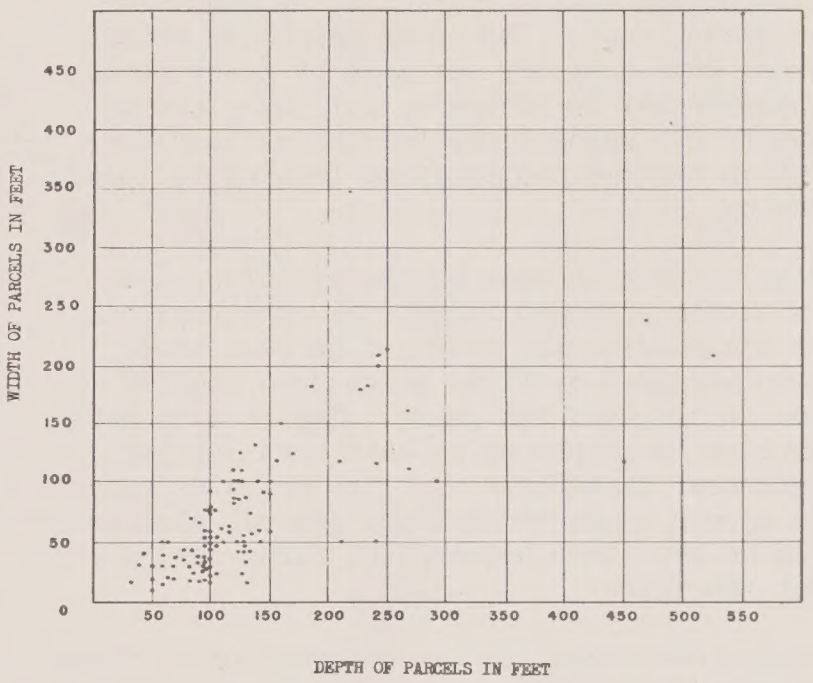
CHART 9
SIZES OF VACANT PARCELS WITHIN THE PROPOSED INDUSTRIAL AREA AND
SIZES OF PARCELS INDUSTRIALLY DEVELOPED DURING THE PERIOD 1939-1950



SIZES OF VACANT PARCELS WITHIN THE PROPOSED INDUSTRIAL AREA




SIZES OF PARCELS INDUSTRIALLY DEVELOPED DURING THE PERIOD 1939-1951




Note: The above chart represents only about 80 per cent of the new and relocated plants.

Area west of Eastshore Highway is not included.

. ONE RECTANGULAR PARCEL
△ ONE IRREGULAR PARCEL

Sources: Industrial Directory, Berkeley Chamber of Commerce, 1939; Directory of Manufacturers and Wholesalers, Alameda County, 1951-1952, Metropolitan Oakland Area Committee; and Sanborn Maps.

A rather crude, but nevertheless enlightening, measure of the sizes of the parcels which will be required in 1970 has been evolved. This step is necessary in view of the fact that the total amount of vacant land in the proposed industrial zone will reveal little regarding the usability of that vacant land. The total amount of vacant industrial land suitably serviced by paved roads and utilities may be adequate, but the sizes of the constituent parcels may be smaller than the sizes which are desired by firms seeking to locate in Berkeley.

An analysis has been made of the existing vacant parcels in the proposed industrial zone together with an analysis of the sizes of parcels that have been acquired by firms which have located in Berkeley in the last ten years. The results have been plotted on graphs which have been labeled "scattergrams" (see Chart 9). The existing vacant parcels appear to be of the same general size as those which have been acquired by firms during the last ten years.

The conclusions based upon an observation of these "scattergrams" should be carefully drawn. One of the things which the scattergrams do no reveal is whether the sites which were acquired by industries locating in Berkeley in the last decade have been sufficiently large to meet optimum requirements, i.e., whether these industries would have purchased larger sites if they had had the opportunity. Moreover, the technique does not tell us if the sites required by those industries which Berkeley would like to attract are increasing in size. More intensive investigation might reveal that (1) the kinds of industry which have located in Berkeley in the last ten years are not the most desirable and (2) that the most desirable industries require larger sites than those which are available.

Nevertheless, the scattergrams can form the basis of a very tentative conclusion, viz., that the existing parcel sizes are probably adequate to satisfy the needs of the industrial firms which are likely to locate within Berkeley in the predictable future.

## Industrial Portions of the Interim General Plan

Principles. The proposals contained in the Interim General Plan for Berkeley, as they relate to the planning of industrial areas in the city, have been based upon the following recognized principles:

1. Industrial areas are best situated near rail lines, major highways, and major streets.

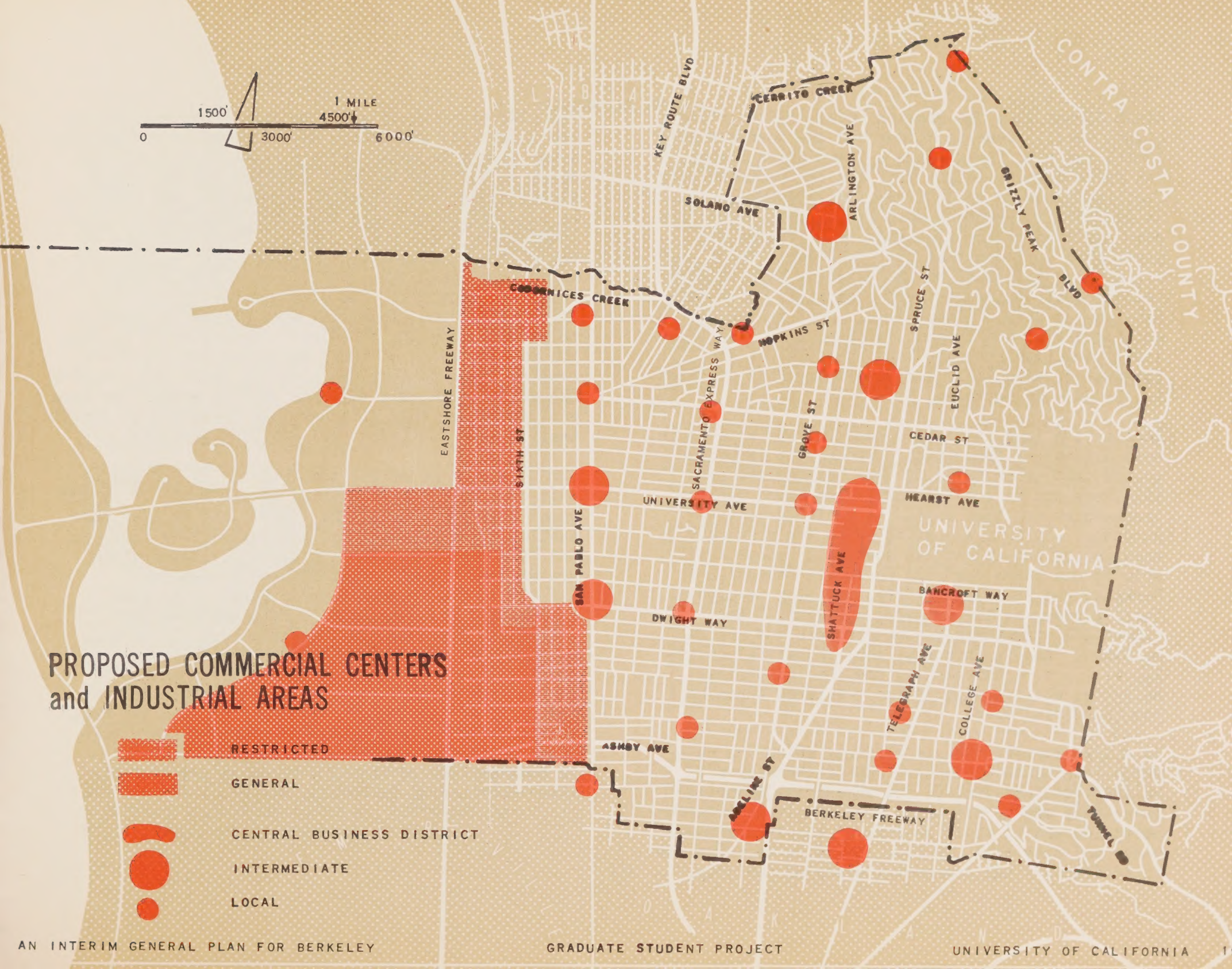
2. Industrial areas should be accessible to residential areas but with proper separation with respect to noise, odors, glare, vibration, industrial-generated traffic, and other hazards or nuisances.

3. Industrial activities function best when the plants are concentrated in clusters.

4. Level terrain is generally best suited to industrial needs.

5. Industrial acreage should be reserved in quantities in excess of the amounts estimated to be required in the future.

Proposals of the Plan. The Interim General Plan proposes that the lands which are located in the area east of the Eastshore Freeway and west of


1500'
1 MILE
4500'
0
3000'
6000'
KEY ROUTE BLVD
CERRITO CREEK
ARLINGTON AVE
GRIZZLY PEAK BLVD
SOLANO AVE
CONTRA COSTA COUNTY
CODORNICES CREEK
HOPKINS ST
SPRUCE ST
EUCLID AVE
EASTSHORE FREEWAY
SIXTH ST
SACRAMENTO EXPRESS WAY
GROVE ST
CEDAR ST
UNIVERSITY AVE
HEARST AVE
SAN PABLO AVE
UNIVERSITY OF CALIFORNIA
SHATTUCK AVE
BANCROFT WAY
DWIGHT WAY
TELEGRAPH AVE
COLLEGE AVE
ASHBY AVE
ADELINE ST
BERKELEY FREEWAY
TUNNEL
PROPOSED COMMERCIAL CENTERS
and INDUSTRIAL AREAS
RESTRICTED
GENERAL
CENTRAL BUSINESS DISTRICT
INTERMEDIATE
LOCAL

Sixth Street plus the section between Sixth Street, Eighth Street, Camelia Street and the northern city limit, and plus the section between Sixth Street, San Pablo Avenue, Dwight Way, and the southern city limit be reserved exclusively for industrial use. In addition it proposes that it may be feasible for some portions of the tidelands to be filled and given over to industrial use, preferably those portions which are south of the existing fishing pier and adjacent to the southern city limit which borders on the City of Emeryville. But, whether or not industrial development is to occur on the tidelands, the plan proposes that there be but one, integrated, adequately serviced industrial district in the City of Berkeley.

Because the land in the proposed industrial area is best suited for industrial purposes, it is recommended that other types of uses be excluded from that area and be located instead in those various areas which are best suited to their respective purposes. In this way sites which are presently occupied by non-industrial uses will become available to new firms desiring to locate factories in Berkeley and to existing firms desiring to expand their plants, as the existing residential and commercial structures become obsolete and are demolished. And in this way, too, industrial activity will not be hampered by the non-industrial nuisances which presently are scattered throughout the industrial area.

In a like manner, industrial firms which are presently located in other sections of the city will be able to find sites in the industrial district where they may be closer to the main lines of transportation and to their sources of supply and service; and they will, in turn, cease to be nuisances in residential and commercial areas of the city.

The plan proposes in addition that those margins of the industrial area which are adjacent to residential areas should be under certain restrictions with respect to building heights, coverage ratios, noise, smoke, glare, and vibration generation, and that they be required to maintain a certain minimum quality of landscaping about their plants. Those sections of the proposed industrial area which are farthest removed from residential developments should have fewer restrictions. The plan proposes that all firms within the industrial area should be required to provide adequate off-street parking areas to meet the parking needs of their employees and off-street loading areas to meet the needs of their own shipping operations. In this way, the streets within the area will be better able to handle the truck and automobile traffic which an industrial district generates.

Should a portion of the tidelands be filled and be made available for industrial development, it is proposed that portions of the filled land be also made available for recreational and residential purposes. And if recreational facilities be developed which are at least equal in quality and recreational utility to the present Aquatic Park, it is then recommended that the Aquatic Park may also be filled and developed in industrial use, if this is necessary in order to accomplish the following proposals: (1) that no industrial development occur in the area which is west of the Eastshore Freeway and north of the present fishing pier, and (2) that the Santa Fe Railway tracks be consolidated with those of the Southern Pacific Company, at least in that portion of the city which is north of the line described by University Avenue.

## E. COMMERCIAL AREAS

The planning of commercial areas in Berkeley involves two major problems: (1) the determination of the amount of land which should be reserved for the future commercial needs of the population of Berkeley, and (2) the location of the future commercial areas of the city. The following discussion is designed to deal directly with these two problems, even though the investigation which has been undertaken yields only preliminary solutions.

In view of the fact that Berkeley is a part of a larger urban complex, it will be necessary first to attempt to obtain a very general picture of commercial trends in the San Francisco Bay region in order to estimate more definitely the future commercial activity in Berkeley. Thereafter will follow a description of commercial activity in Berkeley together with an attempt to estimate the amount of the land that it will be necessary to reserve for future commercial use.

### The Regional Context

San Franaisco is the most important retail, wholesale, and service trade[1] county in the Bay Area. Alameda County is the second most important county in the region in all three respects. In the period from 1939-1948 the rate of growth of Alameda County, in terms of the three types of trade, was faster than San Francisco County.[2]

The data at hand suggest that Alameda County will eventually surpass San Francisco in wholesale, retail, and service trade activities; and in terms of retail trade Alameda County is likely to assume regional dominance within the next twenty years. This prognosis gains support not only in reference to the table cited, but also in reference to the geographical location of San Francisco which strictly limits its potentialities. Economic activity in the region appears to be pivoting to the East Bay primarily and secondarily to the northern and southern sections of the Bay's periphery. Moreover, the East Bay is adequately equipped to assume this anticipated role, for the amount of land in the East Bay which has industrial and residential potential is enormous. The full implications which this shift in activity has for the City of Berkeley and for that matter the whole Bay Region, still remain to be investigated.

In 1948 Alameda County had about 28 per cent of the retail trade establishments in the Bay Area, 27 per cent of the sales, and 28 per cent of the employees. Berkeley is the second most important retail center in the county of Alameda and in the East Bay. In 1948 Berkeley had about 13 per cent

[1] Service trades include such activities as shoe repair shops, barber and beauty shops, cleaning and laundry shops, auto repair shops, advertising agencies, employment agencies, blueprinting, duplicating, and photographic studios.

[2] See Tables 15 and 18 inclusive in Appendix D. The tabulated information will allow only certain general and tentative conclusions to be drawn, however.

of the retail establishments in the county, 12 per cent of the sales, and 11 per cent of the employees. The data at hand suggest that Berkeley will remain the second most important retail center of the county; but if Contra Costa County continues to grow industrially, Berkeley's industrial position in the East Bay may well be relatively subordinate to that of Richmond. If the latter proves to be the case, it might well have a significant effect upon the size and the number of commercial districts in Berkeley.

Commercial Activity in Berkeley

There are approximately 1,100 retail establishments in Berkeley. These establishments, together with wholesale and service establishments and parking in the city, occupy approximately 200 acres of land. It is interesting to note that from 1939 to 1948 retail sales increased by about 200 per cent and the number of retail employees increased by about 35 per cent while the number of establishments decreased by about .5 per cent.

It is necessary to be extremely cautious in drawing conclusions from the above figures. For example, it is not possible to conclude, without a great deal more information, that stores are growing larger, or that less land is required to distribute more goods and services.

Commercial areas may be divided into a number of different categories depending upon the functions of each area. Generally, commercial areas can be classified as central business districts, intermediate shopping facilities, and local shopping facilities.

Central business districts serve the whole community and usually a portion of the area outside the political boundaries of the city. Central districts in larger cities include functions which are used by a large and sometimes scattered segment of the population, and hence are most economically concentrated in one location to facilitate use. These facilities include financial institutions, outlets for heavy consumer durables, certain governmental functions, certain cultural facilities, etc.; and they function primarily to serve the long-run needs of the population.

The intermediate shopping district includes those facilities serving needs which must be satisfied at more frequent intervals of time than those needs served by the central business district. The intermediate districts service a smaller population than does the central business district and include such facilities as banks, super-markets, small clothing stores, variety stores, auto repair garages, drugstores, beauty parlors, shoe repair stores, etc.

The local shopping district is usually smaller in size than the intermediate district because the population that it serves is smaller. Its primary function is to serve day-to-day needs. Its facilities will usually include such stores as groceries, repair shops, laundering and cleaning outlets, drugstores, etc. The three types of shopping facilities are not mutually exclusive. The central business district usually includes intermediate and local facilities and the intermediate district usually includes local shopping facilities.

The major portion of the commercial activity in Berkeley can be found in strip developments which

string along Shattuck, University, San Pablo, Telegraph, College, and Solano Avenues, and along Adeline Street. Large sections of these commercial strip developments appear to be made up of marginal or near-marginal establishments, as reflected by their poor state of maintenance. This condition is particularly apparent in parts of the commercial development on San Pablo, Shattuck, University, and Telegraph Avenues, and on Adeline Street, and is due in part to the inherent difficulties in strip development. These difficulties are expressed in terms of shopping inconvenience for the pedestrian, conflicts between vehicular traffic passing through the commercial areas, and pedestrian and vehicular traffic using the commercial facilities. The problem of poorly maintained commercial facilities may also be traced to an over-supply of commercial facilities in terms of the purchasing power of the people which they serve; this proposition, however, must remain in the form of an hypothesis until such time as more detailed information can be gathered. Still other difficulties which may well be contributing to the deterioration of some of Berkeley's commercial districts are inadequate parking spaces and a poor organization of land uses within the commerical districts.

Preliminary study indicates that there are about 24 local shopping centers, 7 intermediate centers, and 1 central business district in the City of Berkeley which can be dist inguished as nuclei in the strips of commercial development. In addition there are many corner grocery stores scattered throughout the residential area.

The local shopping centers vary in size from about three to twenty stores, depending upon their location and their proximity to other commerical centers. The maximum distance that urban inhabitants like to walk to reach shopping facilities probably varies from one city and region to another. But if it is assumed, as a very rough and preliminary guide, that the citizens of Berkeley desire shopping center facilities within a maximum distance of about one-third of a mile from their place of residence, then it appears that the major portion of the flatlands and the southeastern portion of the city are adequately served. Most of the North Berkeley Hill area is outside of this assumed standard.

Most of the shopping centers of the city are located on the existing major and secondary arterials. The reasons for this development seem to be fairly obvious, for it is on the major and secondary thoroughfares that the greatest volumes of people travel to and from their places of work and play and their places of residence.

The seven intermediate centers, which fall in size and type of facilities offered somewhere between the local centers and the Central Business District, are Elmwood, Telegraph, Dwight and Shattuck, Adeline and Alcatraz, University and San Pablo, Solano, and Shattuck and Vine.

The Elmwood district extends for about two blocks along College Avenue between Webster and Russell Streets. The center of activity is at the intersection of College and Ashby Avenues. This center probably serves the general southeastern section of the city from Telegraph Avenue east to and including the Claremont District. The center appears to be rather neat and prosperous, although some of the establishments on the periphery seem

to be marginal in character. There is a considerable conflict between through traffic on Ashby and College Avenues and the pedestrian and vehicular traffic visiting the center. Parking facilities for the center are inadequate, and the deficiency undoubtedly contributes to the extreme congestion in the district.

The Telegraph commercial district is shaped like the letter "T". On Telegraph Avenue it extends for about four blocks on both sides of the street between Dwight Way and Bancroft Way. On Bancroft Way it is generally bounded by Dana and Bowditch Streets. The center serves primarily the southern side of the campus community, and for this reason the center of activity is generally between Channing Way and Bancroft Way on Telegraph Avenue and on Bancroft Way. The section of the district on Telegraph Avenue between Channing Way and Dwight Way seems to be largely marginal in character, even though a few of the grocery stores are undoubtedly engaged in a quite lively trade. The parking problem in this district is as serious as it is in the Elmwood District, and is probably due in great part to the parking demands of students attending classes at the University.

The Dwight Way and Shattuck Avenue commercial district is in reality an appendage of the Central Business District. The general boundaries of the former are approximately between Channing Way and Blake Street on Shattuck Avenue, although there are several commercial establishments on Dwight Way east of Shattuck Avenue. Commercial uses, which are predominantly auto repair shops and new and used car sales establishments, extend south to about Ward Street on Shattuck Avenue. There seems to be considerable merit in the suggestion that this area be made an exclusive auto sales and repair area. Similar uses can be found on that section of Shattuck Avenue between Channing Way and Durant. The parking problem in the Dwight and Shattuck District does not seem to be as severe as in the Elmwood and Telegraph Districts, although at certain times of the day the parking demand exceeds the supply of spaces. The general area that the district serves is probably the area to the south and west of the district.

The Adeline and Alcatraz commercial district generally extends between Russell and Sixty-Third Streets on Adeline Street. The hub of activity of the area is located between Fairview Street and Alcatraz Avenue. This center appears to have reached its peak of commercial activity sometime in the past, judging by the number and age of the stores. The three major problems which confront the city with respect to this district seem to be as follows: (1) an undersupply of parking spaces, (2) inconvenient pedestrian circulation due to the width of Adeline Street, and (3) a commercial land use pattern which is not consistent with the number of people which the district serves, their purchasing power, and their patterns of purchasing activities.

The University and San Pablo commercial district generally extends from Ashby Avenue to the northern political boundary of the city, although the major hub of activity is to be found in the general vicinity of the two major thoroughfares, University and San Pablo Avenues. The area that this district serves is generally the western portion of the city. The commercial development along San Pablo is a good example of the general meaning of commercial blight; many of the structures are

very old and poorly maintained. The rate of occupancy turn-over is not known at this stage of the investigation, but it is suspected that it is fairly high in some portions of the strip development. Many of the businesses appear to be marginal in operation. The major problems that confront the city with respect to this district are similar to those associated with the Adeline and Alcatraz District, with the exception of parking. At the present time there is a sufficient supply of parking space, although a deficiency may well be expected in the future if the density proposals of the Interim General Plan are effectuated.

The Shattuck and Vine commercial district generally extends between Cedar and Rose Streets on Shattuck Avenue. This center is one of the most attractive shopping districts in the city. The stores are not very old and are quite neat in appearance. The center is compact in shape and has a service road along a portion of its frontage. The general area that this center serves is primarily the North Berkeley Hill area. The existing parking space supply seems to be adequate to serve present demand. It is anticipated that more parking space will have to be provided to meet future needs.

The Solano commercial district is actually a part of a larger commercial strip development which extends into Albany. It begins at The Alameda in Berkeley and extends west on Solano Avenue into Albany. The hub of activity in the district centers around the area between Modoc Street and The Alameda on Solano Avenue. The area that the district serves is to be found generally in the northern half of the North Berkeley Hills and the Thousand Oaks District. The district is fairly neat in appearance and is likely to continue to prosper. The parking space supply approximates the demand much more closely than most of the other districts, even though the area is in need of some additional parking space. It is anticipated that the existing parking facilities will prove to be inadequate in terms of the additional service that the center is likely to supply in the future.

The general area of the Central Business District today is between Milvia and Oxford Streets on the west and east and between Berkeley Way and Durant Avenue on the north and south. As mentioned before, the Dwight and Shattuck intermediate shopping center is appended to the Central Business District on the south. The focal point of commercial activity appears to be between Center Street and University Avenue on Shattuck Avenue. One of the major reasons for the location of this focal point appears to rest with the fact that the intersection of the two major arterials, University and Shattuck Avenues, provides the most important transfer point in the entire city for local and regional transit lines. Several problems might be enumerated that have emerged from the preliminary study which has been made of the Central Business District: (1) there is at present a serious deficiency of parking space, which in part is due to the fact that (2) there is a poor organization of land uses, which is reflected by the facts that (3) there is at present little integration between the Civic Center,[3] the Central Business District,

[3]The Civic Center includes the City Hall, the Berkeley Community Theater, the Plaza in front of the foregoing, the Farm Credit Building, and the Veterans' Building.

and the University of California; (4) there are in the Central Business District a number of non-commercial uses, such as industrial establishments which are more properly separated from commercial areas; (5) there is a great deal of very expensive space being wasted by the existing practice of building on a portion of a lot in such a manner as to make the remainder unusable, and (6) there is no definite organization of commercial facilities along functional lines, which may be expressed in terms consistent with the patterns of customer use of the facilities and consistent with the patterns of pick-up and delivery of goods.

A Projection of Berkeley's Commercial Land Requirements

Apart from the problems involved in the location of shopping centers with respect to pedestrians and vehicles which were touched upon above, there remains yet another set of problems with respect to the manner in which the sizes of the different types of shopping facilities are determined. Given a determination of the service area of each of the different types of shopping centers, how much space should be reserved for each of the centers to meet the needs of the population of the city twenty to thirty years hence?

At least four methods have been used by individuals and groups interested in estimating the amount of commercial space that will be required in the future of a community. The first method may be termed the linear foot method wherein commercial space is reserved on the basis of a certain number of linear feet of store frontage per 100 people. The ratio can be established either by taking the store frontage and population of Berkeley and using these as a basis for estimating the frontage required given a specified increase in the population, or by taking the average number of feet of store frontage per 100 people that has existed in other communities of a similar size.[4] The reliability of this method has decreased in recent years due to the increased use of the automobile; greater store widths and store depths are being demanded by super-markets and similar stores, and experience is too inadequate in these new types to provide the basis for new ratios.

The second method is the square foot method, wherein commercial space is reserved on the basis of a certain number of square feet per 100 persons or acres per 1,000 people. This method, while it may give a fairly good picture of the over-all city requirements, tends to break down when applied to an individual shopping center due to the variation in store types in different centers.

The third method may be termed the percentage method, wherein commercial space is reserved on the basis of the extent to which the city is built up. Individual business centers are provided space in terms of the extent to which its service area is built up. The limitations of this method rest with its disregard of different population densities and income groups.

The fourth method may be termed the rational method, wherein commercial space is provided on the basis of the number of people in the service area of the center and the purchasing power of

---

[4]See, for example, Harland Bartholomew, Urban Land Uses, Harvard University Press, 1932. Chap. viii.

this population. Expenditures for various types of goods and services can be analyzed, insofar as possible, in order to determine the space that will be required for different types of stores.[5] This method would encompass an analysis of shopping habit patterns, income levels, the mortality rate of business, etc. The fourth method is, in the judgment of this study, the method which should be adopted in determining the size of commercial areas in Berkeley.

Statistics which have been gathered during the course of this investigation indicate that from 1939 to 1948 the number of retail establishments (including warehouses) had decreased slightly (-0.5 per cent) in Berkeley while the number of retail employees had increased by 35.8 per cent. In the same period, sales had increased by 201 per cent.[6] It is difficult to draw any definite conclusions from these data due to the fact that (1) the price level has increased, (2) sufficient information is not presently available regarding the extent to which shopping centers outside of the political boundaries of Berkeley have been used by Berkeley residents and vice versa,[7] and (3) the leveling of the postwar retail business boom may not yet be fully expressed.

The tendency generally is probably to consolidate retail trade. This means in effect that fewer and perhaps larger stores are handling a greater portion of the retail trade. No statistics are available regarding the amount of land which was devoted to commercial use in the years 1939 and 1948. If such information were available, more precise estimates could be made concerning the relation between sales, employees, establishments, and the amount of land required. At this stage of investigation one does not know definitely whether the amount of land which will be required for commercial development is actually more or less.

Therefore, it has been tentatively assumed that the same ratio of commercial space to population which obtains at the present time will also hold for the predictable future. The present population of the City of Berkeley is approximately 114,000. There are approximately 200 acres of land, including the space devoted to parking, in commercial use in the city at the present time. The holding capacity, as represented in the Interim General Plan, is estimated at about 150,000. By setting up a proportion between the 1950 ratio of population to commercial use and the ratio of the holding-capacity population to commercial use, a very crude and tentative 300-acre estimate can be made for lands which must be reserved for commercial use. This figure has been adjusted in the light of considerations of (1) the parking space that would be necessary to accommodate future commercial facilities, taking into account the effect of an improved intra-city

---

[5] See Robert M. Lillibridge, Shopping Centers in Urban Redevelopment, Land Economics, May 1948, pp. 137-159 for a procedure which can with a few modifications be utilized for planning the size of any commercial area.

[6] Price changes not taken into account.

[7] For some information in this regard see Robert G. Danielson, Consumer Buying Habit Studies and Their Application in Berkeley, California. M.B.A. Thesis, University of California, 1951.

and inter-city mass transit system to lessen the need for parking space, and (2) a re-organization of commercial land use within the city to make for a more efficient use of space.

It must be re-emphasized that the figure of 300 acres is necessarily crude due to the fact that much of the necessary information has yet to be accumulated. But it seems at this stage that the estimated requirement would be somewhat in excess of the actual requirement if the potential space economies involved in minimizing the existing practice of using only a portion of commercial lots are realized. It is extremely difficult to predict with any exactitude the effect of a good transit system on the use of the automobile as a form of transportation with the attendant necessity for providing parking space. But it seems logical to assume that should a more efficient mass transit system be established which provides a convenient connection between living and shopping areas, the need for commercial parking space may decline.

Given the total amount of land which is to be reserved for commercial use, how is it possible to allocate this land to various parts of the city? It is necessary to determine the locations of the existing shopping centers and the boundaries of the population area which the centers serve. Shopping centers are distinguished from commercial strip developments by delineating those nuclei which have a grouping of stores of a certain type. A grocery store, drugstore, service station, bakery, laundry pick-up, etc., are usually included in a local shopping center. A bank, dry-goods store, library, variety store, branch post office, super-market, gift shop, auto garage and those uses included in the local center are usually included in an intermediate center. After determining, in a tentative way, the location of the shopping centers of the city, the following general procedure may be employed:

1. Apply a standard desirable walking distance to shopping centers to determine the areas that are inadequately served.

2. Determine the ratio between commercial land in these centers and the population that they serve. Consider the relation of income to this ratio.

3. Apply this ratio together with income considerations to the inadequately served areas determined in (1) above, locating additional centers where appropriate.

4. Reduce the size of the existing shopping centers (after insuring that sufficient space is maintained for parking) to take account of their new service areas.

Abstractly this procedure would appear to function well, but considerable difficulty is encountered in attempting to apply the theory. An auto field survey has been undertaken to distinguish the shopping center nuclei from the strip commercial developments. The general criteria which have been employed for the delineation of the boundaries of the three types of commercial centers is the same as outlined above. As a result of this field survey it is possible to distinguish 24 local shopping centers and 7 intermediate districts besides the central business district. These results are fairly crude, due

to the rapidity with which the field survey was conducted, although the results are accurate enough for the general purposes of this study. The real difficulty is encountered in attempting to determine the population which each of the centers serves. The existing centers are so dispersed that it is impossible except through extensive field survey, to distinguish the service areas of each of the districts. One of the reasons for the existing dispersion may lie in the fact that there is a high rate of interchange of people between Berkeley and the cities of Oakland, San Francisco, Richmond, etc. Shopping is often performed by people going to and from work, and may be accomplished at any one of a number of districts.

The inability to determine the service areas of the shopping centers causes a radical re-organization of thinking. Without specific data concerning the shopping habit patterns of the citizens of Berkeley it is necessary, at this stage of the formulation, to do some considered guessing. Recognition of the interdependence of Berkeley with other cities of the region strongly suggests that future commercial areas of Berkeley be located predominantly along major and secondary thoroughfares.

Principles Applicable to the Planning of Commercial Areas

1. Commercial areas should be separate from, but proximate to industrial and residential areas.

2. Commercial facilities should be near and, if possible, integrated with the cultural facilities of the community.

3. Commercial facilities should be serviced by adequate transportation facilities connecting the commercial areas with consumers and wholesale establishments.

4. The area devoted to commercial use should be at a minimum consistent with the optimum satisfaction of the convenience and economy needs of the citizens in purchasing goods and services.

5. Commercial acreage should be reserved in quantities in excess of the amounts indicated by the projections of land requirements, in order to provide for a margin of error in the projections, and in order to discourage inflated land costs arising from a shortage of commercial land and from the construction of valuable non-commercial development on lands which will later be needed for commercial purposes.

6. Insofar as the major regional retail centers within the metropolitan core offer services not possible of duplication in each local community in the region, the planning for commercial land use in the local communities must give due cognizance to the dominance of the metropolitan shopping districts.

A number of different theories regarding the location and shape of business districts are expounded at the present time. The purposes of this report will only allow a cursory description of the main components of these theories.

It is maintained by some that the commercial districts of a city should be located on the major

arterials, for it is here that the greatest volumes of people pass in going to and from their homes and places of employment. Thus, it is felt, this location can be defended on the ground of convenience to consumers. Others think that business centers should be located near but not on major thoroughfares, the reason being that traffic not intending to stop at the center can proceed without conflicting with the stopping, turning, and parking traffic of the business center, thus facilitating the movement of both types of traffic.

Another group holds that local shopping facilities should be located to serve primarily pedestrian traffic in those areas where automobile registration is low. The major concern of this group with regard to locational theory is the manner in which shoppers gain access to the commercial center. Large centers would require a proximity to the major thoroughfares, due to the increased use of vehicles to reach the districts from places of residence.

Yet another theory is concerned with the shape of the business center, which is a part of the locational question. It is argued that business centers will operate most efficiently if arranged in a compact group. It is maintained by these same theorists that if commercial areas are allowed to string out along major thoroughfares, the following effects are likely to occur: (1) pedestrians will have a more difficult time in making their purchases; (2) through traffic will conflict with shopping center traffic along a greater distance of the street; and (3) the commercial strip will cause blight in the surrounding residential areas.

Still others maintain that there is nothing inherently wrong with strip commercial development, as some individuals like to think. It is argued that with proper provision of off-street parking, of transition zones between commercial and residential development, of regulations regarding the maintenance of commercial establishments, and of appropriate traffic signals and other devices, the strip development can operate just as efficiently and can be just as convenient to use as the compact group of stores. There are a number of refinements which can be made of each of the foregoing theories, but this is not the place for an examination of them.

Which of the theories can be applied to Berkeley? What seems to be apparent is that the planning of commercial areas cannot as yet be reduced to pat formulas. The location and the shape of business centers seem to be dependent upon a number of different factors all of which may not be known at this stage of the formulation.

Although there may be considerable merit in the argument that, other factors being equal, shopping centers operate more efficiently as compact units, there may be something yet to say for the string development with regard to the shoppers using automobiles. This point is of considerable significance in view of the fact that many people travel between Berkeley and the larger metropolitan region going to work, shop, play, and places of entertainment. Many thoroughfares in Berkeley have heavy daily volumes of traffic generated by these same people. The existing strip commercial developments in Berkeley have followed primarily these same thoroughfares. With adequate parking facilities and with proper treatment of peripheral

portions of the commercial areas to protect abutting residential development, it may be possible to maintain certain strip commercial development as an asset rather than a liability.

In view of the fact that there will probably continue to be a large number of people traveling between Berkeley and other cities in the region, the principle may be adopted that shopping centers should, insofar as possible, be located near major and secondary thoroughfares.

Proposals of the Plan

It is proposed that approximately 300 acres be reserved for commercial use and parking space associated with such use to meet the needs of the population within the next twenty years. No attempt has been made in the formulation of the Interim General Plan to determine the specific size of the various districts, the reason being that sufficient study has not yet been conducted concerning the relationship between income and the amount of commercial land necessary to serve that income, concerning the shopping habit patterns of the citizens of Berkeley, etc.

It is possible at this stage, however, to make preliminary proposals concerning the general scale and location of commercial development throughout the city (see Plate 12 above).

The Interim Plan proposes that the general size, shape, and location of the existing Central Business District be retained while unifying the district with the Civic Center and the University of California. Further studies should be directed toward the reorganization of the land uses in the Central District along more functional lines, which make more efficient use of the existing space and which recognize both the patterns of consumer purchasing activities and the patterns of pick-up and delivery of goods. It is not intended that the Berkeley Central Business District shall attempt to perform the functions of a metropolitan retail district. The central business districts of Oakland and San Francisco will undoubtedly continue as the twin cores of commercial concentration in the Bay Area, and the Berkeley District should therefore continue to serve as a local "downtown" center serving the citizens of Berkeley and a relatively small percentage of citizens from neighboring communities. For those who prefer to live in the central district, the plan proposes that residential accommodations for approximately 2,000 persons should be retained.

The Interim General Plan also proposes eight intermediate districts. These are to be located in the vicinity of existing focal points of commercial activity and are as follows: Ashby and College; the area between Channing Way and Bancroft Way on Telegraph Avenue; the area between Channing Way and Dwight Way on Shattuck Avenue; the area between Fairview Street and Alcatraz Avenue on Adeline Street; University and San Pablo Avenues; Dwight Way and San Pablo Avenue; the area between Rose and Vine Streets on Shattuck Avenue; and the area between Modoc Street and The Alameda on Solano Avenue.

It is also proposed that the existing strip commercial development in the city be gradually reduced and the existing establishments be relocated in more compact groupings in the vicinity of the focal areas listed above. Residential and industrial uses should be excluded from all commercial areas.

To the end of reducing the strip commercial development, it is recommended that further studies be directed toward ascertaining (1) the shopping habit patterns of the population of Berkeley, (2) the income groupings of the population, (3) the age of commercial structures in the strip developments, (4) the rate of occupancy turnover in the structures in the strip developments, and (5) an efficient organization of land uses in the proposed locations of the intermediate districts.

The proposed local shopping centers are too numerous to mention here (see Plate 12). The existing centers are in large part retained. In addition, four new local shopping centers are proposed for the North Berkeley Hill area. Given the basic data relating to shopping habit patterns and income groupings, more precise locations and sizes for these local centers can be determined.

In summary, the Interim General Plan makes only tentative recommendations with respect to the development of commercial areas within the city. It proposes that the Central Business District and the seven existing intermediate districts be retained in the locations of their existing nuclei. One local shopping center located at San Pablo Avenue and Dwight Way is recommended for expansion to the intermediate district level. The many local shopping centers are recommended for retention in their present locations. In all cases, and whenever feasible, it is proposed that the strip developments be contracted and that the various centers be encouraged to develop as more centralized concentrations of shops with ancillary parking spaces. Plate 12 which illustrates these proposals indicates only the relative sizes of the various centers and their approximate nuclei. More detailed proposals must wait upon the intensive studies which would follow in the course of preparation of the official general plan.

## F. RECREATION AREAS

The Regional Context

Throughout the San Francisco Bay Region a host of natural areas and recreation facilities attract residents from the more concentrated population centers. Fleishhacker Zoo, Golden Gate Park, the Aquarium, and the museums in San Francisco; the East Bay regional parks; the yacht harbors of San Francisco, Alameda, Richmond, and Marin County; the stadiums and baseball parks in San Francisco, Oakland, and Palo Alto; Muir Woods and Stinson Beach in Marin County; and Lakeside Park in Oakland, to name a few such areas, attract many Berkeley citizens and others as well.

In turn, Berkeley attracts visitors from other parts of the region with its yacht harbor, the Memorial Stadium, the Aquatic Park, and the new Community Theater. Proximity to Tilden Regional Park is another factor which draws many people from other parts of the region to Berkeley for recreational purposes.

Among the many recreation facilities in the region, the East Bay regional parks are of major benefit to Berkeleyans and other East Bay residents. The East Bay Regional Park District maintains four parks which extend for sixteen miles along the ridge of the Oakland-Berkeley Hills and comprise a total of 4,431 acres of land. The administration of the Park District is under the jurisdiction of the Regional Park Board representing the seven cities which make up the district; they are Alameda, Albany, Berkeley, Emeryville, Oakland, Piedmont, and San Leandro. The following is a list of facilities at each of the four regional parks:

Charles Lee Tilden Regional Park:

| | |
|---|---|
| Swimming | Boating |
| Club House | Golf Course |
| Picnic Areas | Archery Range |

Lake Temescal Regional Park:

| | |
|---|---|
| Swimming | Boating |
| Picnic Areas | Club House |

Round Top Regional Park:

- Picnic Areas

Redwood Regional Park:

- Picnic Areas
- Archery Range
- Club House

At the present time the district is negotiating to purchase 3,000 acres to the south of Redwood Park and east of San Leandro. This new area will help to reduce the pressure on the other parks where picnic areas, especially, have been crowded to capacity during the seasons of favorable weather. The Regional Park Board is also planning further improvement and expansion of existing facilities to make more space available for picnicking areas and facilities for the active forms of recreation.

There is still another possible future development which may have a significant influence on the pattern and extent of recreational activity in the Bay Region and Berkeley as well. San Francisco is presently considering the acquisition of Angel Island for recreational purposes. The Bay Area Council first recommended in 1947 that

the island be used as a public recreation area and has supported studies and actions leading to its transfer from ownership by the Federal Government to serve recreational needs of Bay Area communities.[1]

Recreation in Berkeley

The amount of space which is presently reserved for recreational purposes in Berkeley does not compare very favorably with the amount reserved in some of the other cities of the Bay Region.

| City | Recreation Areas (acres) | Acres Per 1,000 Persons | Date |
|---|---|---|---|
| Alameda[1] | 182.0 | 3.00 | (?) |
| Berkeley[2] | 195.3 | 1.71 | 1951 |
| Oakland[3] | 995.8 | 2.60 | 1950 |
| Richmond[4] | 41.0 | 0.40 | 1948 |
| San Francisco[3] | 1,856.0 | 2.45 | 1950 |

[1]Report on Area, Population, and Water Consumption of the E.B.M.U.D. and Special Sewer District No. 1.

[2]Ronald L. Campbell, Planning Consultant, Long Range Recreation Plan for Berkeley, California, June, 1945. Data revised to 1951.

[3]Interviews with Park and Planning Departments.

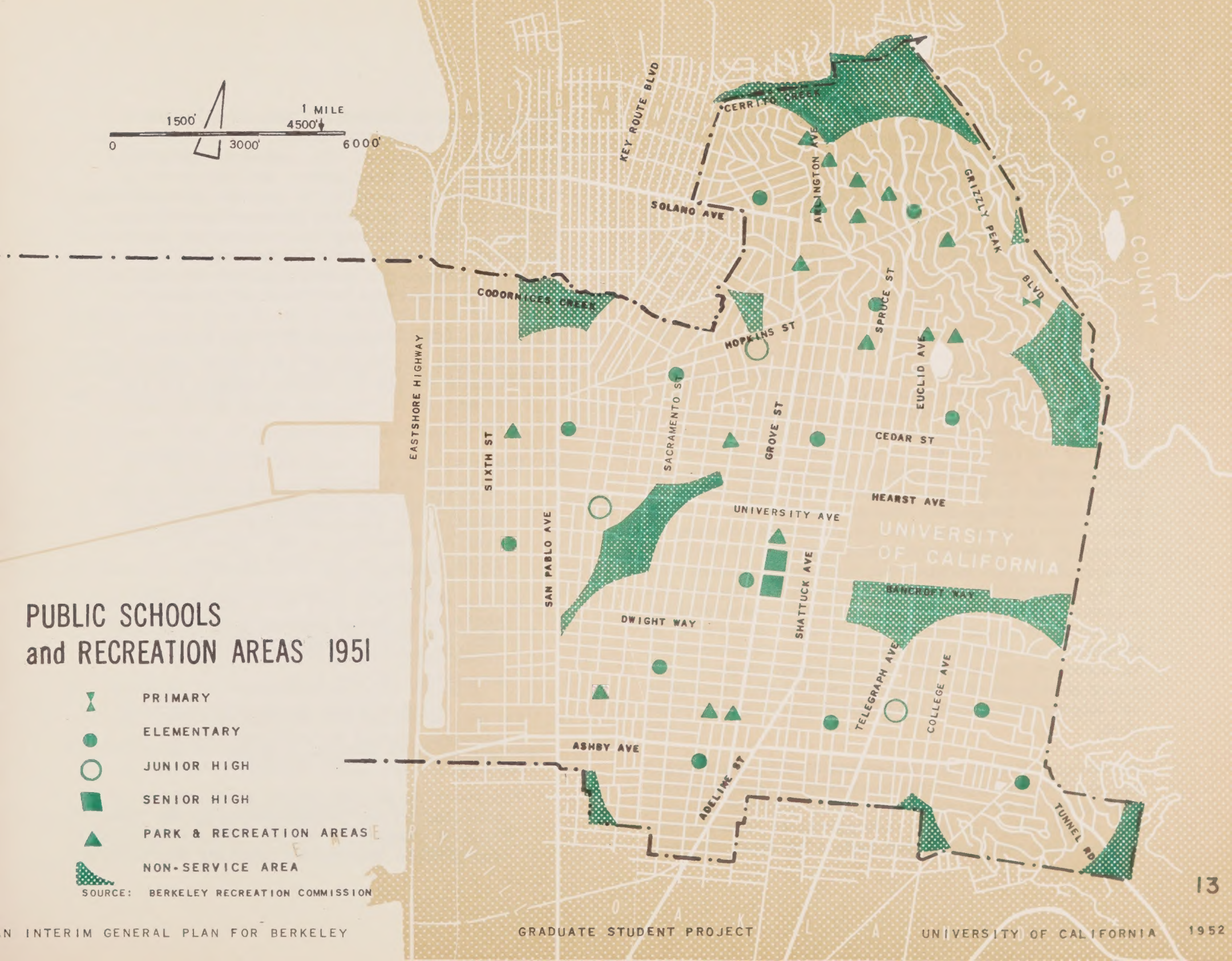
[4]Report on Schools and Recreation, Richmond Planning Department, 1948.

[1]See Bay Area Council's Guiding Bay Area Growth, May, 1950.

Berkeley has at the present time approximately 119.4 acres of parks and 76.9 acres of supervised playgrounds, which include the playgrounds used by the school system. Aquatic Park comprises 91.7 acres of the 119.4 acres in city parks. If a standard of three acres per thousand population is used as a criterion for evaluating the adequacy of the existing recreation areas in Berkeley, then the city is presently deficient by about 150 acres.

The existing total recreation space is distributed rather unevenly over the whole of the city. The North Berkeley Hill area, notably, encompasses approximately 27 per cent of the total acreage of the city and contains approximately 10 per cent of the population, yet this area has about 77 per cent of the park area of the city. Even this area is not adequately provided with recreation space according to accepted standards.

Plate 13 presents a graphic picture of the areas which are presently served by recreation facilities, however adequately or inadequately. The basis of the illustration is only the standards for distance. The facilities would probably appear to be even less adequate if the existing density and age composition patterns were considered. The distance standard, however, affords a rough picture of the inadequately served areas of the city. It can be seen that very large sections of the city are presently lacking in any kind of recreation space. The area east of Shattuck Avenue and south of the University Campus is completely lacking in recreation space except for those areas associated with public school facilities. Similarly, the area generally bounded by San Pablo Avenue, Dwight Way, Grove


1500'
1 MILE
4500'
0
3000'
6000'
KEY ROUTE BLVD
CERRITO CREEK
SOLANO AVE
ARLINGTON AVE
GRIZZLY PEAK BLVD
CONTRA COSTA COUNTY
CODORNICES CREEK
HOPKINS ST
SPRUCE ST
EUCLID AVE
EASTSHORE HIGHWAY
SIXTH ST
SACRAMENTO ST
GROVE ST
CEDAR ST
HEARST AVE
UNIVERSITY AVE
SAN PABLO AVE
SHATTUCK AVE
UNIVERSITY OF CALIFORNIA
BANCROFT WAY
DWIGHT WAY
TELEGRAPH AVE
COLLEGE AVE
ASHBY AVE
ADELINE ST
TUNNEL RD
PUBLIC SCHOOLS
and RECREATION AREAS 1951
PRIMARY
ELEMENTARY
JUNIOR HIGH
SENIOR HIGH
PARK & RECREATION AREAS
NON-SERVICE AREA
SOURCE: BERKELEY RECREATION COMMISSION

Street and Virginia Street is for all practical purposes almost completely deficient in recreation space; here as in the area south of the campus the only recreation areas available are those associated with the public schools. A similar situation also exists in the northern section of the city, in the western section of the Thousand Oaks District, and in the area west of The Alameda. Except for a small area in the North Berkeley Hills and another small area in the general vicinity of the City Hall, the city is without small local parks.

There are several natural areas in Berkeley which have a considerable recreational potential which has not as yet been realized. The small streams in Berkeley have been almost entirely overlooked as sites having recreational value, and in many places they have been placed underground. Residential uses have been allowed to develop along the banks of large sections of Cerrito and Codornices Creeks, and thus much of the natural beauty of the creeks and their settings have been lost to the general public. Nevertheless, an opportunity may exist for the recovering of a great deal of the inherent aesthetic and recreational value of the streams due to the probability that many of the residential structures that border the streams, particularly those along some portions of Codornices Creek, are old and may become unusable within the next generation.

Strawberry Canyon is another natural area which has a number of unexploited aesthetic and recreational advantages. The greater portion of the canyon is outside of the political boundaries of the city and the entire canyon is owned by the University of California. This area, unlike Codornices and Cerrito Creeks, is still largely in its natural state. The variable topography, the wooded and grassy areas, and the views of the Bay combine to offer an unusual potential for passive as well as active forms of recreation. While the canyon is used to some extent by the University for its botanical garden and by students and others for picnicking and hiking, it remains on the whole unnoticed and unused.

Principles for Planning of Recreation Areas

1. The types and sizes of recreation facilities should be geared to the numbers and age groupings of the population which they serve.

2. Physical barriers such as hills, heavily-traveled thoroughfares, railroad routes, etc., should be considered in the determination of sizes and locations of recreation areas and of the types of facilities which are included in them.

3. A city which is a part of a larger urban concentration should depend in part upon certain specialized types of recreation facilities which are maintained outside the boundaries of the city.

4. Natural areas having certain aesthetic advantages should be utilized insofar as possible as recreation areas.

5. The location of recreation areas should be coordinated and integrated with the location of commercial areas, industrial areas, and schools insofar as possible and in such

a manner that the recreation space will serve as a buffer between these uses and residential areas.

Standards

Standards for recreation areas may be classified in at least two ways: (1) standards which are expressed in terms of minimum recreation space per unit of population, and (2) standards which are expressed in terms of the maximum walking-distance from each place of residence to the different types of recreation facilities. The standards which may be applied to the planning of recreation areas in Berkeley are of both types, and are as follows:

1. Three acres of recreation space per one-thousand persons.

2. One to three average residential parcels (approximately.11 acres per parcel) for tot-lots.

3. Four residential lots (approximately .44 acres) to 4 acres for playfields.

4. One-fourth mile maximum walking-distance to tot-lots and passive recreation areas.

5. One-half to three-fourths mile maximum walking-distance to playfields.

6. One-half to one mile maximum walking-distance to multiple-purpose parks and playgrounds.

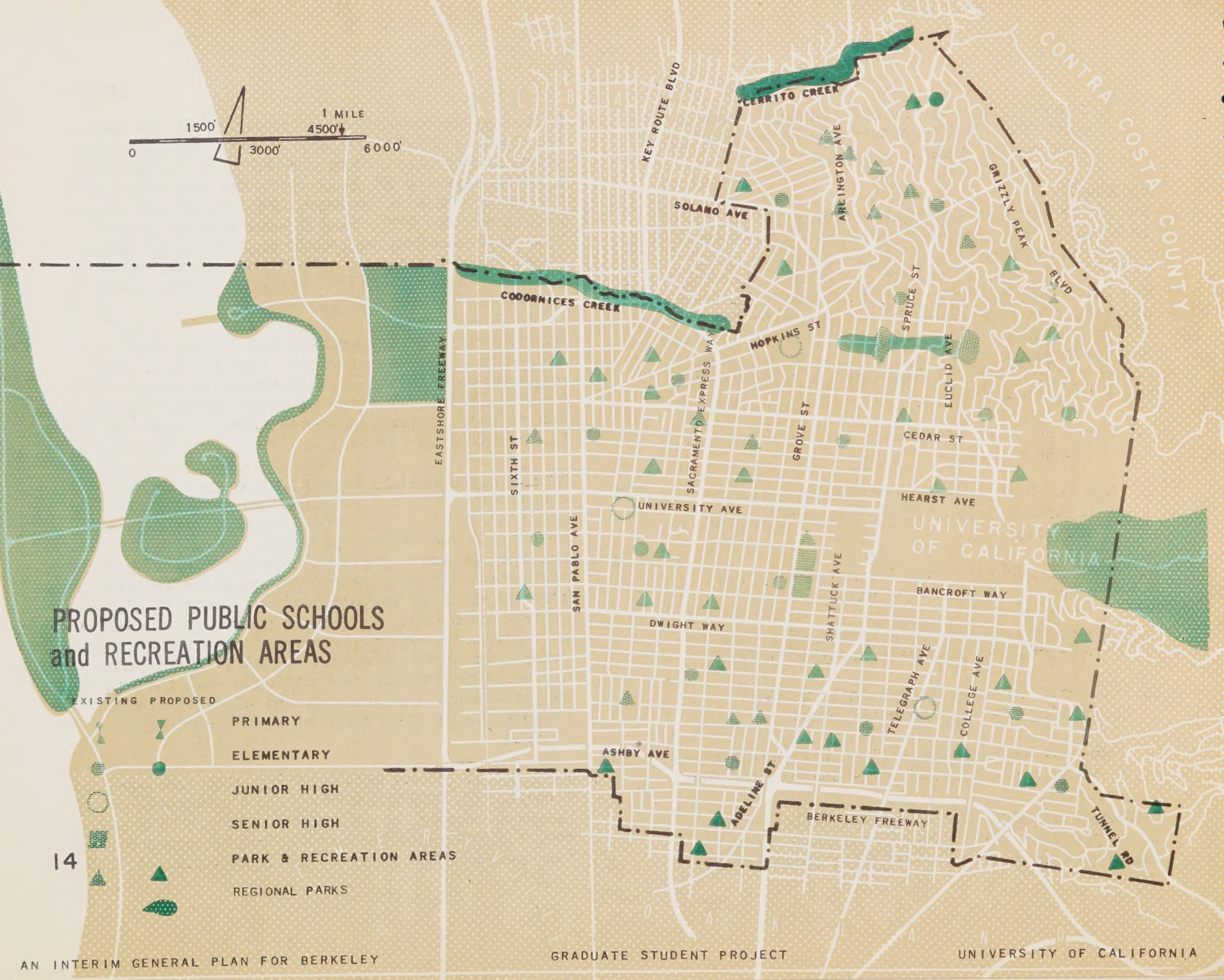
Proposals of the Interim General Plan

It is proposed that approximately 478 acres of land be reserved for recreational purposes in Berkeley, in order to meet the needs of the approximately 150,000 persons who will be accommodated in the city, in accordance with the planned holding capacity of the Interim General Plan. Including the Aquatic Park, the city presently maintains some 193 acres of recreational lands. Thus approximately 285 additional acres are proposed for development. The proposal amounts to providing approximately 3 acres of recreational space per one-thousand persons.

Specifically, it is proposed that three types of recreation areas be provided, together with what might be considered a quasi-recreation area. Plate 14 illustrates the proposed number, type, and size of recreation areas. These areas may be described as follows:

Tot-lots and Passive Recreation Areas. These areas vary in size from about 5,000 sq. ft. to about 15,000 sq. ft. Their primary function is to provide recreation space and facilities for children of the approximate age-range of six to nine years and passive recreation areas for the older members of the population. Since it is desirable to have these areas closer to places of residence, they will be more numerous than the other recreation spaces in the city. The standard maximum distance that citizens will have to walk in going from their places of residence to these areas is one-fourth mile, or two long blocks.

Playfields. These areas vary in size from approximately one-half acre to four acres. Their primary function is to provide space for the more active forms of recreation desired by persons nine years of age and above. It is proposed that


1 MILE
1500'
4500'
0
3000'
6000'
CERRITO CREEK
KEY ROUTE BLVD
SOLANO AVE
ARLINGTON AVE
GRIZZLY PEAK BLVD
CONTRA COSTA COUNTY
CODORNICES CREEK
EASTSHORE FREEWAY
HOPKINS ST
SPRUCE ST
EUCLID AVE
SACRAMENTO EXPRESS WAY
GROVE ST
SIXTH ST
CEDAR ST
HEARST AVE
UNIVERSITY AVE
SAN PABLO AVE
UNIVERSITY OF CALIFORNIA
BANCROFT WAY
DWIGHT WAY
SHATTUCK AVE
TELEGRAPH AVE
COLLEGE AVE
ASHBY AVE
ADELINE ST
BERKELEY FREEWAY
TUNNEL RD
OAKLAND
PROPOSED PUBLIC SCHOOLS
and RECREATION AREAS
EXISTING PROPOSED
PRIMARY
ELEMENTARY
JUNIOR HIGH
SENIOR HIGH
PARK & RECREATION AREAS
REGIONAL PARKS

a playfield be provided within three-fourths of a mile from each place of residence, or about six long blocks.

Quasi-Recreation Areas--Viewpoints. Certain parts of Berkeley offer magnificent panoramic views of the Bay Region. These views are particularly striking from the hill areas of the city. Since the hill areas were originally subdivided, the number of open spaces usable for views of the Bay has gradually declined with the advancing residential construction. It is proposed that a number of existing spaces be maintained along various streets in the hill areas for the purpose of preserving views of the Bay for the general public.

Multi-Purpose Parks and Playgrounds. These areas vary in size with different areas of the city. They should be designed to provide recreation facilities for all age groups within one mile of each place of residence.

Included are three major natural areas of Berkeley. It is proposed that Codornices Creek be developed from Bonita Street east to Codornices Park in a strip approximately 200 feet wide; this will not only unify Live Oak Park with Codornices Park but will also provide excellent places for picnicking and walking along the banks of Codornices Creek. It is further proposed that Codornices Creek and Cerrito Creek be developed in a similar manner where the creeks form the political boundaries of the city and that Strawberry Canyon be developed for public recreational use. Specifically, in order to make full use of the canyon, it will be necessary, among other things, to improve the means of access both by foot and by car to different parts of the area, to renovate Strawberry Pool, and to destroy the poisonous foliage which exists in considerable quantity in the canyon.

## G. SCHOOLS

### The University of California

With the presence of the University of California, Berkeley's position as the educational center of the Bay Region is unquestionable. In 1947, a survey of the State-supported schools of higher learning indicated that the total student enrollment in the region was approximately 54,000[1] as compared to the enrollment at the University of California at Berkeley of 22,500 (or about 42 per cent of the regional total). The regional total, however, does not include many of the private business and technical schools and universities. Business and technical schools have approximately 2,000 additional students. Stanford University has approximately 7,700 students. Even when considering these privately supported institutions the percentage at Berkeley is still over 35 per cent of the regional total.

The University has always been growing and the growth of enrollment has usually induced, in turn, a growth of physical facilities. If the trend in enrollment were to continue at the same rate, in 1970 the student population at the University would be somewhat over 30,000. Along with the over-all increase at the University in the past there has been a corresponding increase in the proportion of graduate students. This has been due probably in part to the growing number of Junior Colleges in the Bay Region. Junior Colleges throughout the region are assuming an increasing responsibility for undergraduate training.

Accepting the recommendations of a committee appointed to make a survey of the needs of higher education in California, the Regents of the University of California have established a policy of maintaining the student population at about 20,000. This means that with the continued increase in the student population in the state, facilities in other parts of the Bay Region and State will have to be established to augment the existing schools. Certain departments will have to be relocated away from Berkeley as has already been done to some degree with the expansion of the San Francisco and Davis Campuses. To further alleviate pressure on the desired 20,000 maximum, the University has planned to open Schools of Letters and Science on the Davis and Riverside Campuses, to enlarge the existing facilities at Santa Barbara, and to increase the capacity of the campus at Los Angeles.

The increasing enrollment at the several theological seminaries in Berkeley is following a trend very similar to that at the University. However, the role of the theological as well as the business, technical, and other private schools should be examined in more detail at a later stage of the planning process in order to determine more precisely their future space requirements.

---

[1] State Board of Education and the Liaison Committee for the Regents of the University of California, A Survey of the Needs of California in Higher Education, 1947.

While there are a number of students from Berkeley attending schools in other parts of the region such as San Francisco, Oakland, etc., there is still a greater number of students coming to Berkeley for educational training of different types.[2]

Local Public Schools in Berkeley

There are at the present time in Berkeley 14 public elementary schools, 1 primary school (kindergarten and grades 1-3), 3 junior high schools, and one senior high school. A number of the elementary schools are operating at levels near optimum capacity, and one of these, Hillside Elementary, is operating at a point over optimum capacity. Nine of the elementary schools are making use of temporary facilities. Based upon a projection of birth records and school population trends, it is estimated that at least three more elementary schools, viz., John Muir, Oxford, and Whittier, will be operating at points over optimum capacity if existing plants are not expanded by the year 1970. A commonly accepted standard walking distance from each place of residence to an elementary school is one-half mile. If this standard is applied to Berkeley, it is found that the major portion of the city is adequately served. There are five fairly large areas which fall outside the maximum one-half mile limit. One of these areas, however, is adjacent to the southern side of the University Campus in the area of student housing and is in no great need of elementary school facilities. Thus, for practical purposes, there are four major areas which are not at the present adequately served. Two of these areas are in the North Berkeley Hills, one in the general vicinity of the central section of the city, and another in the northwestern section of the city. The four inadequately served areas are generally in the vicinity of those schools which are operating a number of temporary classroom buildings.

The three junior high schools of the city are presently serving the city in a manner somewhat similar to the service provided by elementary schools. One mile is the standard which is commonly accepted with regard to the maximum distance that any pupil should have to walk in order to reach a junior high school. By applying this standard to Berkeley it is found that all sections of the city are within the one-mile radius of a junior high school with the exception of two areas, one of which is in the southern section of the city and the other of which is in the northeastern section of the city. The latter section is by far the larger of the two. The size and configuration of these areas suggest that it would be uneconomical to relocate the existing facilities or to construct new facilities which would bring these outlying areas within the one-mile standard distance. Two of the junior high schools, Burbank and Garfield, are operating at points near the accepted standard of 1,000 students per school.

The one senior high school in the city has a student enrollment of about 2,200, which is above the standard maximum size of 1,500 accepted by a number of authorities. The northern section of the North Berkeley Hills is the only area outside the standard desirable walking distance of one and one-half mile from each place of residence to a senior high school.

---

[2]See Table 21 in the Appendix for the numbers of students commuting from other parts of the region.

Principles for School Planning

1. The type and size of educational facilities should be geared to the numbers and age groupings of the population which they serve.

2. A city which is a part of a larger urban concentration should depend in part upon certain specialized types of educational facilities which are maintained outside the boundaries of the city.

3. Physical barriers such as hills, heavily traveled thoroughfares, railroad lines, etc., should be considered in the determination of the location of educational facilities.

4. School locations should be integrated insofar as possible with the municipal park system in order to minimize the duplication of recreational facilities.

Standards for Public School Planning

The standards which are employed here in planning for the educational facilities of Berkeley can be categorized in two ways, as follows: (1) by the distance that any resident will have to walk in order to reach each type of educational facility, and (2) by the number of students that are most desirably enrolled at each type of facility. These two types of standards may be stated as follows:

1. An elementary school should be located within one-half mile from each place of residence.

2. A junior high school should be located within one mile from each place of residence.

3. A senior high school should be located within one and one-half miles from each place of residence.

4. The maximum size of elementary schools should be 750 students.

5. The maximum size for junior high schools should be 1,000 students.

6. The maximum size for senior high schools should be 1,500 students.

Proposals of the Interim General Plan

In view of the pronounced policy of the Regents of the University of California to maintain the student population of the University at approximately 20,000, the Interim General Plan does not make any proposals for expanding the amount of space that the University now occupies. It is definitely recommended, however, that some steps be taken to coordinate the planning activities of the University with the planning activities of the City of Berkeley and that the University dormitory development should be situated in the area south of the campus, between Bancroft Way and Dwight Way.

The plan proposes that three new elementary schools be constructed in order to meet the needs of the population in Berkeley within the next twenty years. One of these should be located in the general vicinity of Allston Way and Acton Street, and the present site of the Berkeley Corporation Yard may be made available for this purpose. The location of this school is designed to serve an area

presently outside the existing one-half mile standard. It will also serve to relieve future congestion in the elementary schools which surround it. The plan also proposes that another school be located near Campus and Avenida Drives and Olympus Avenue. The location of this school is designed to serve an area which is also outside the present one-half mile standard and to relieve congestion at Hillside Elementary School. Another elementary school is proposed near Spruce Street and Michigan Avenue. A school at this location will also serve an area which is at present inadequately served. A possible site is available at this location, the development of which will involve the realignment of Spruce Street, the filling of a deep ravine, and a joint use of the site which is also planned for use as a municipal playground facility.

The remaining major area which is presently outside the one-half mile standard is in the northwestern section of the city in the vicinity of Codornices Village. The Interim General Plan proposes to develop the land occupied by the Village for industrial purposes; this will eliminate the need for providing additional facilities for a major portion of the inadequately served area. The remainder of the latter area will be too small to warrant expenditures for new school facilities.

The plan further proposes that the existing junior high school plants be expanded to accommodate anticipated increases in enrollment. Willard and Burbank Junior High Schools will probably require the greatest share of additional facilities in view of the fact that the greatest share of anticipated population increases will occur in their service areas. The additional space requirements of each of these facilities must be determined after the completion of a detailed analysis of the capacities of existing facilities and an estimation of future age composition patterns in various sections of the city.

As the population of Berkeley approaches the population holding capacity proposed in the Interim General Plan and as the large number of postwar children reach high school age, enrollment in Berkeley's senior high school might well increase to about 3,000, and additional facilities will be needed. Two alternatives present themselves: either the existing facilities can be expanded by acquiring more land on the periphery of the present site, or a new site can be selected and an entirely new high school constructed. It seems generally unwise to increase the congestion and the attendant hazards in and around the Central Business District be accommodating the anticipated enrollment increases by expanding the facilities at the existing site. Therefore, it is proposed that an entirely new site be selected and another high school constructed which may allow for the reduction in student enrollment at the existing high school and which will accommodate the increases in student enrollment which can be anticipated with an increase in the over-all population of the city. It is proposed that the city be divided generally into eastern and western school districts and that the new high school be located somewhere between the Sacramento Expressway and San Pablo Avenue. In this manner the new high school will be able to serve not only the general area between Sacramento and the Eastshore Highway, but also such residential development as occurs on the tidelands. Moreover, the heavy investment in the existing high school can be protected and the school can continue to serve that section of the city which will be east of the proposed Sacramento Expressway.

# H. MOTORWAYS

The Regional Context

The San Francisco Bay Area has experienced during the last half-century not only remarkable population and economic growth but a profound change in technology as well. Accompanying the metropolitan area's expansion has been an increased necessity for population and goods mobility. Concomitant with the rise in demand for transport facilities to serve the ever-increasing volumes of passengers and freight, there has occurred a major technological advancement in transport media--the free-wheel vehicles, the airplane, and vast improvements in types of facilities which had their origins in the last century, including the steamship, the railroad, and public transit.

The free-wheel vehicles in most common use in the Bay Area today include the automobile, the taxi, the motor coach, the trolley coach, and the truck. Each of these vehicles is capable of controlled speed and controlled direction over paved rights-of-way, or motorways. It is toward a consideration of the principal types of free-wheel vehicles --the automobile, the truck, and the bus--and of the facilities for their movement in the Bay Area and Berkeley that this discussion is oriented.

The intricate pattern of vehicular movements in the San Francisco Bay Region is made possible by a complex network of motorways linking the various parts of the metropolitan area to one another. This network has evolved over the years, having had no over-all planned objectives as guides, but rather having been laid out in piecemeal fashion as growth and the need for new facilities or improvement to established facilities have arisen. It may be said, inasmuch as the system of vehicular arteries does to some degree perform its function of moving the various kinds of traffic, that it "works". However, it is evident to those who in negotiating Bay Area streets and highways have experienced delays, congestion, and traffic conflicts that the system is greatly in need of improvement.

The major regional problems which require attention today are associated with the peak-hour congestion which occurs on the San Francisco-Oakland Bay Bridge, with the heavy traffic volumes at the Broadway Low-Level Tunnel, and with the heavy peak-hour flows between the central cities and the Peninsula, Marin County, and the north and south East Bay. For the motorist, for the transit operator, and for the trucker the deficiencies of the motorways are reflected in higher operating costs and delay. For many, the costs are measured in human lives.

These region-wide problems have received the active attention of governmental agencies at all levels. Through the joint efforts of the federal, state, county, and city agencies a regional system of freeways is being developed, designed to facilitate the major movements of traffic. Supplementary to the freeway system, local agencies are engaged in efforts to develop local traffic carriers, feeder systems, and various ameliorative devices--one-way street systems, curb-parking regulations, tow-away zones, reduced speed limits, street widenings, grade-separation structures,

signalization, and increased traffic police forces. But in spite of the efforts being exerted today, the intensity of the traffic problems continues to grow and the problem seems inevitably to outrun its solution.

In its essential nature the problem is one of providing facilities sufficient to serve the increasing numbers of free-wheeled vehicles. It is the common problem confronting urban areas throughout the nation, but it is especially severe in the California cities where greater use is made of the private automobile than in most other areas. And because of the severity of the California problem, the long-range solution will probably lie in alternatives which have not yet been incorporated into programs for improvement.

In recognition of these alternatives, city and county planners and highway and traffic engineers have been turning their attention to the development of other forms of transportation which can make for more efficient use of the space devoted to circulation within the Bay Area. They are considering other forms of urban motorways than the systems of city streets which were developed during the periods of horse-drawn vehicles. They are considering the possibilities of developing an appropriate balance among the various media for the movement of people and goods. And they are considering the feasibility of the establishment of a public regional planning agency which would be charged with the responsibility of developing a long-range, general plan in which circulation media would be integrated with all land using activities throughout the region.

The motorways proposals of the Interim General Plan for Berkeley represents an effort to resolve the many questions confronting Berkeley as the recipient of a large volume of interregional traffic. It also seeks to resolve the many problems deriving from the internal traffic movements within the city. In both cases it is based upon the assumptions noted in Chapter 4 above with respect to the characteristics of the envisioned general plan for the region. With the formulation of the regional plan and with the completion of the studies of Berkeley's circulation needs, the plan's proposals may need to be materially revised.

Berkeley's Existing Motorways

The basic patterns of Berkeley's street system were determined at an early date by the radial highways which extended from Oakland. Upon reaching the central portion of Berkeley, the highways were topographically forced into a north-south direction, thus forming a system of longitudinal major thoroughfares paralleling the Berkeley Hills. With the exception of the highway which became San Pablo Avenue, each of the thoroughfares ends within Berkeley where it confronts the hill block or meets the University campus. As the consequence, but little through-city traffic enters Berkeley, most of it being encouraged to travel around the city at the waterfront.

The grid streets which were laid in the areas between the thoroughfares were platted over a comparatively long period of time, each subdivider attempting to orient his grid toward the nearest major street. The consequence has been that the axis of the grids of adjacent subdivisions lie at right angles to each other, thus creating frequent three-street intersections which have in turn encouraged the use of the major streets.

For many years Berkeley was without any major east-west thoroughfares, and it was really not until the opening of the Bay Bridge and the Broadway Tunnel that University Avenue and Ashby Avenue developed to their current proportions.

But although some of Berkeley's thoroughfares are clearly delineated and although some of the interior grid streets discourage through traffic use, this is not always the case. Little distinction exists, for example, among the various types of thoroughfares as they relate to the nature of the vehicular use to which they are put. Some major or secondary thoroughfares are identical in width to local, residential streets, in spite of the wide differential in traffic volumes which may occur. And, at the other extreme, some major streets are too wide to allow for their efficient use.

At a much smaller scale, Berkeley is today confronted with the same problems as are faced by the Bay Area as a whole. Again, the issue can be stated simply: It is the problem of providing facilities sufficient to serve the increasing numbers of free-wheeled vehicles by attempting to adapt a system of streets which was designed to serve a relatively small number of horse-drawn vehicles.

The Thoroughfares. The historical development of Berkeley's thoroughfares which followed from the early radial routes from Oakland was also greatly influenced by the steam train, electric streetcar, and interurban train lines which were laid in the years of early settlement of the area. Many streets were defined after these lines were built, with resulting rights-of-way wider than those of adjacent streets. With the advent of widespread use of the free-wheel vehicle these arteries were reinforced as traffic carriers through the process of arterialization, or the erection of stop signs and signals to control cross-traffic. In general the pattern of through streets today reflects this historical accident, but there are instances, such as the Eastshore Highway, which were expressly designed for the purpose of carrying vehicular traffic at relatively high speeds.

The accommodation of vehicles in motion is, of course, not the only function of Berkeley's system of main arteries. All streets within the city (with the possible exception of Eastshore Highway) serve to provide access to abutting private and public lands. This second function conflicts seriously in many instances with the first. Involved is a third function as well--that of providing for the storage (parking) of vehicles within the defined right-of-way. The combination of these three diverse usages of street areas frequently prevents the streets themselves from performing any of these functions to the optimum degree.

University Avenue might be cited as a case in point. In part it is a business street, the predominance of frontage between San Pablo Avenue and Oxford Street being devoted to commercial establishments. But it is also an important east-west traffic carrier, moving vehicles both between areas within the city and between various parts of Berkeley and the Eastshore Highway. But despite its one-hundred-foot right-of-way, it accommodates but four moving lanes of traffic; the remaining width being occupied by sidewalks and curb parking spaces. It is the on-street vehicular storage function which is the direct cause of much of the

congestion now experienced on this street, for the entry and exit of vehicles to and from the parking spaces frequently block one and in some cases two lanes of moving traffic. Further, the vehicular conflicts resulting from uncontrolled left-turn movements tend to nullify the primary purpose of the street--to serve as a through-traffic artery.

Chart 10 represents an attempt to classify the main, arterialized thoroughfares of Berkeley in accordance with their major functions. Both predominantly north-south and east-west main streets are evaluated in light of their use for the listed functions. The functions are:

1. Movement of vehicles--local and intra-city in nature
2. Movement of vehicles--inter-city and regional in nature
3. Access to abutting property--business and major traffic generators
4. Access to abutting property--other uses (e.g., residential)
5. On-street storage of vehicles (parking; listed only if intensively so used)

The classifications in Chart 10 are based in the final analysis upon intuitive judgments; and the reader may wish to review them in the light of the information contained in Plate 4, "Generalized Land Use" (page 78), and in Plate 15, "24-Hour Vehicular Traffic Volumes", below. The chart may serve to yield a quick picture of "problem streets" and of streets which suffer most from mixed functions.

Traffic Generators. A traffic generator may be defined as an area of specialized function or functions which forms an origin, a destination, or a stopping point for a significant number of trips. Within the City of Berkeley areas of great traffic generation include the University of California, the Central Business District, and the industrial area to the west of San Pablo Avenue. Lesser but important traffic generators are the community- and local-type shopping centers in various portions of the city, and areas of special activity, such as the Civic Center, the schools, the larger park and recreation areas, commercial recreation facilities (e.g., theaters, Golden Gate Fields, and the University of California's Memorial Stadium) and various institutions. Each of these areas manifests its traffic-generating characteristics through the movement of people and vehicles to and from it, through direct access from street areas, and through the demand for vehicle parking space.

The University of California is the daily destination of more than 20,000 persons--students, academic and administrative employees, and visitors. The area around the administrative center of the University is the focus of much of the University's traffic generation; conflict here between pedestrians and vehicles is most serious, especially in relation to the activity of the adjacent Telegraph Avenue shopping district.

The Central Business District in Berkeley, as in most other cities, presents a major problem as a traffic generator. From all parts of the city and from other sections of the metropolitan area as well people, autos, trucks, and busses converge upon this quarter-square-mile area. Lying between the University and the Civic Center, the Central Business District occupies a crucial area indeed,

# 24-HOUR VEHICULAR TRAFFIC VOLUMES 1950

15

SOURCE: BERKELEY DEPARTMENT OF PUBLIC WORKS

INTERIM GENERAL PLAN FOR BERKELEY

GRADUATE STUDENT PROJECT

UNIVERSITY OF CALIFORNIA 1952

Chart 10

CLASSIFICATION OF MAIN THOROUGHFARES IN BERKELEY ACCORDING TO PRINCIPAL FUNCTIONS, 1951

| NORTH-SOUTH ARTERIES | Movement of Vehicles | | Access to abutting uses | | On-street vehicular storage (parking) |
|---|---|---|---|---|---|
| | Local and intra-city in nature | Inter-city and regional in nature | Business and major traffic generators | Other (e.g., Residential) | |
| Alameda-Grove | x | x | x | x | x |
| Arlington | x | | | x | |
| Claremont | x | x | x | x | x |
| College | x | x | x | x | x |
| Colusa-Monterey | x | | | x | |
| Eastshore | | x | | | |
| Euclid | x | | x | x | x |
| Gayley-Piedmont-Warring | x | x | | x | x |
| Grizzly Peak | x | | | x | |
| Milvia | x | | x | x | |
| Sacramento | x | x | | x | |
| San Pablo | x | x | x | | x |
| Shattuck-Adeline | x | x | x | x | x |
| Sixth-Seventh | x | | x | x | |
| Spruce-Oxford-Fulton | x | | | x | x |
| Telegraph | x | x | x | | x |
| EAST-WEST ARTERIES | | | | | |
| Alcatraz | x | | | x | |
| Bancroft | x | | x | x | x |
| Cedar | x | | | x | |
| Dwight | x | | | x | |
| Gilman | x | x | | x | |
| Hearst | x | | | x | x |
| Hopkins | x | | | x | |
| Marin | x | | | x | |
| Rose | x | | | x | |
| Shasta | x | | | x | |
| Solano | x | | x | | x |
| Tunnel-Ashby | x | x | | x | |
| University | x | x | x | | x |
| Virginia | x | | | x | |

for its traffic-generating qualities tend to augment those of the other two areas.

The places of employment of the citizens of Berkeley are concentrated in the commercial and industrial districts of the city; the University and the Central Business District are prominent in this respect. Of major importance, too, are the manufacturing establishments in Berkeley which are a collective end of the two-way, daily journey-to-work of thousands of wage earners. The capacity of thoroughfares is invoked to its fullest at certain hours of the day when workers converge upon or issue forth from these employment centers. The pattern would surely be simpler if all employees of Berkeley institutions lived in Berkeley, or if all of Berkeley's employable residents worked within the city. But such is not the case. The street system of Berkeley, then, is called upon to handle not only local traffic but traffic of a regional nature as well. The complex array of movements resulting from the many areas of traffic generation calls for a flexibility of arteries of circulation in excess of that available at present.

Characteristics of Traffic Volumes. Actually very little factual information has yet been accumulated with respect to the complex of origins and destinations and the actual use patterns of vehicular traffic in Berkeley. In 1947 the Bay Area Metropolitan Traffic Survey was conducted, covering a large part of the central cities of the region; however, information provided by this investigation was of primary use only in determining traffic origins and destinations between the two sides of the Bay rather than locally between segments, say, in Berkeley. To date, no adequate origin-destination survey has been made in Berkeley. Considerable data do exist, however, relative to 24-hour volume counts on most of the city's main traffic routes. During 1950 the Berkeley Department of Public Works made extensive surveys to this end; the information covering the 24-hour volumes is illustrated graphically in Plate 15.

Auto Registrations. No data are available with reference to the total number of automobiles owned by Berkeleyans. However, it is possible, using figures of the State Department of Motor Vehicles, to make a reasonable approximation of the total number. Statistics of this agency, compiled on a county basis, indicate a ratio of 2.4 persons per automobile in urbanized Alameda County. Assuming this figure to be a reasonably valid one for Berkeley, and applying it to Berkeley's 1950 population of 113,805, an estimate of 47,300 automobiles may be derived.

Similarly, data are lacking on automobile registration for smaller segments within Berkeley. It is felt to be reasonable here to assume that there are higher proportions of automobile ownerships and higher-rent areas of the city, as compared with the lower-rent areas; from this assumption it may be deduced that the hill area persons-per-car ratios are somewhat lower than those of the level sections of Berkeley. The range of the persons-per-car ratios for sizable areas of the city probably extends from 2.0 to 2.6 in the higher- and lower-rent areas, respectively.[1]

---

[1]This estimate is based upon evaluation of (a) unpublished studies of the Berkeley City Planning Department, 1951, (b) an assumption, in the absence of current income data, that a correlation

The Auto-Transit Dilemma

Profound changes have occurred in the transportation habits of urban dwellers within the last three decades in general and within the last ten years in particular. The advent of the widespread use of the automobile has been both a cause and a result of a reduction of public transit service in American cities. Berkeley has felt the effects of this trend as fully as any other city so affected; let one compare the volumes of private vehicular traffic today with those of twenty years ago, say, and let him also compare the service available in the form of public transit at that time with that provided today.

The automobile today is considered by many to be man's most satisfactory answer to his individual transportation needs. But when population densities are as great as they are in urban areas which have inherited a system of streets appropriate to a past less mechanized age, the number of automobiles, each carrying less than two persons on the average, takes on large proportions. A public transit service in this metropolitan area has had to face the resulting physical competition for street space and the economic competition for passengers. So great has been the effect of the automobile on public transit services that the latter have been unable, by themselves, to cope satisfactorily with the former. Clearly, in our cities today it is impossible to move all people by automobiles alone; yet the physical and economic effects of present widespread use of the private passenger car have brought about reductions in both quality and quantity of public transit service--reductions so great as to have induced a preference for the private automobile.

Reduced incomes to transit operators have been the result of the trend to the use of the automobile; the reduced revenues have naturally resulted in an over-all lessening of service and gradual reductions in the amount of monetary reserves which the transit operator has been able to set aside for necessary capital improvements and replacements. In turn, the decreasing quality of public transit service has reinforced the trend away from its use. Concomitant with this "vicious circle" has been a second spiral--that of public transit fare increases to offset losses in patronage and which have had the effect of encouraging still more people to use of their own automobiles for urban transportation. The aggregate effect has been rising problems of urban mass circulation, creating for the individual who must travel within the city an increasingly more difficult choice.

Parking

It is frequently and justifiably said that the limit of usefulness of a system of motorways is the terminal facilities which are available to the vehicles which use the system. Unlike mass transport facilities, which require no significant amounts of storage space at points of origin and destination of transit users, motorways deposit their traffic and force it to find storage space. "Department stores, for example, would require three to four times as much floor area

---

exists between rent and income, and then between income and car-ownership, and (c) Alfred Pulitz Research, Inc., The Automobile in the Daily Life of the American Population, unpublished, April, 1951.

for parking as for retail activities, if all customers came by automobile; every office building would have to be supplemented by a parking garage of equal floor area to accommodate vehicles of workers alone."[2]

The numerous problems which are associated with the provision of parking facilities for private vehicles have been regarded as being of a nearly insoluble nature, unless our cities are to be completely rebuilt, or unless alternate forms of transport are sought. On-street parking conflicts with street usage; off-street parking areas or garages require enormous capital investments. The problem of parking or storage of automobiles is thus inextricably tied to the auto-transit dilemma.

Berkeley's Major Circulation Problems

The specific deficiencies in the vehicular circulation pattern of Berkeley today may be listed as follows:

1. The lack of an adequate connection serving regional traffic between the Eastshore Highway and the residential areas east of Berkeley. Combined through and local traffic seriously complicate circulation on Ashby Avenue and on intersecting vehicular carriers within the city.

2. The presence of major conflicts on University Avenue arising from its use both as a business street and as a major, central east-west artery.

3. The absence of a central north-south inter-city route free from local traffic generators.

4. The need for an adequate connection between residential areas north and south of the University of California campus.

5. The need for a through, direct connection from the North Berkeley Hills residential area to shopping facilities on Solano Avenue and to the Eastshore Highway.

6. The lack of convenient access to Charles Lee Tilden Regional Park east of the city.

7. The lack of separation of local traffic from industrial traffic generated by the Radiation Laboratory installation in the upper part of the University of California campus.

8. The mixture of through and local traffic in the vicinity of the Berkeley Central Business District.

9. The insufficiency of off-street parking facilities within traffic-generating areas, such as the Central Business District, the Civic Center area, the University of California campus, the high-density residential areas north and south of the University, and the many smaller shopping areas throughout the city.

Proposals of the Interim General Plan

Regional Routes. A number of proposals of the Interim General Plan are regional in character, or at least partly so. The first of these concerns the completion of the process of converting

---

[2] H. H. Allen, Everyone Can't Ride in Automobiles, 1944.

the present Eastshore Highway into a full, grade-separated freeway. This is not a new proposal, being a part of the program of the State Division of Highways for freeways throughout the Bay Area. In fact, work has already been started on the construction of a grade separation structure at the intersection of Powell Street and the Eastshore Highway in Emeryville. Similar interchanges at Ashby Avenue, University Avenue, and Gilman Street in Berkeley are necessary before this regional route will meet freeway standards.

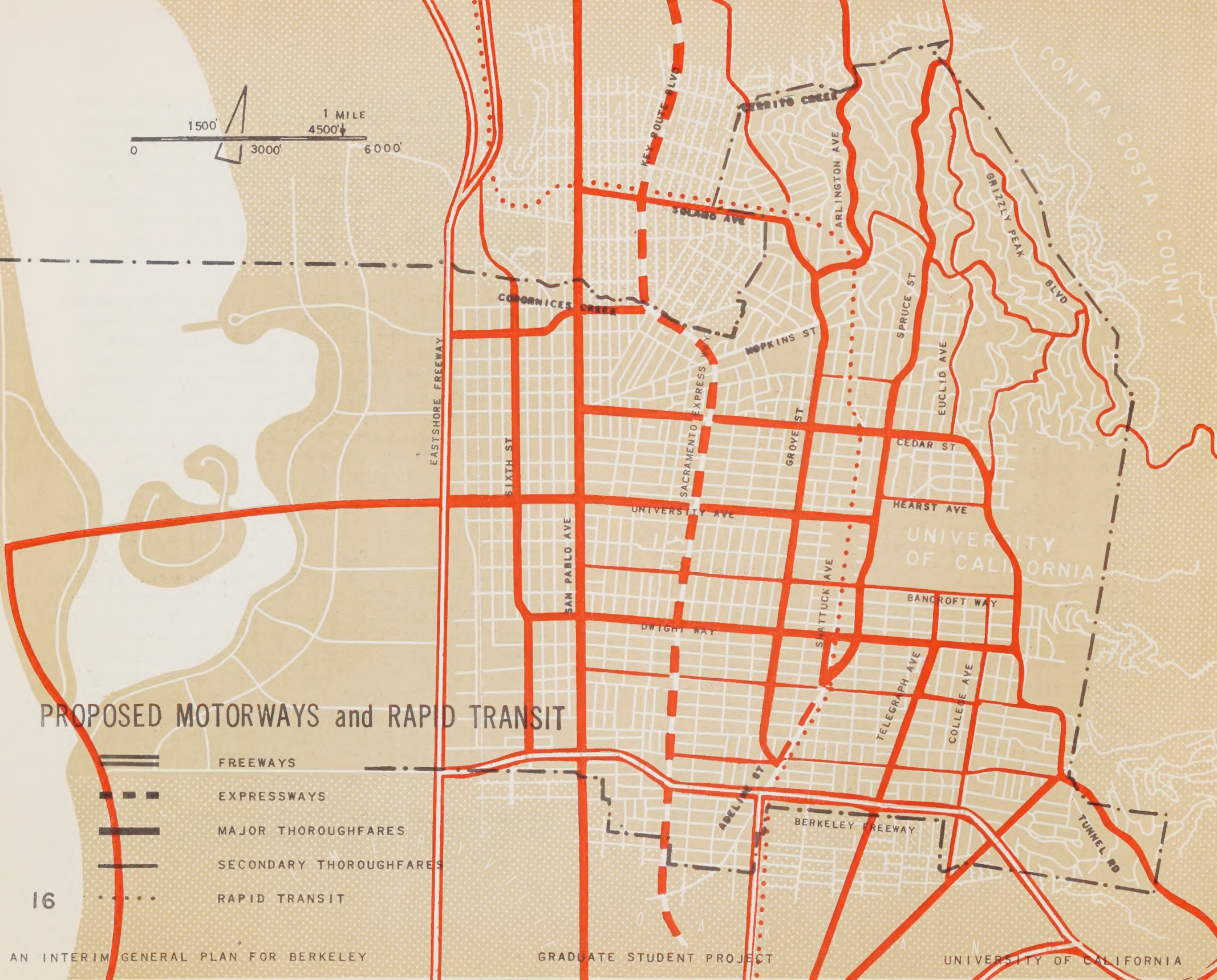
The plan also proposes the construction of the Berkeley Freeway, connecting the Eastshore Freeway, and thus Richmond and San Francisco, with the upper East Oakland, Orinda, Lafayette, and Walnut Creek areas. The need for such a high-speed, high-capacity vehicular carrier was determined by the State Division of Highways in 1945. To date no final alignment for the Berkeley Freeway, as studied by the State Division of Highways and the Berkeley Department of Public Works, has been determined, although several schemes are under study at the time of this writing. The Interim General Plan for Berkeley proposes an alignment which closely follows the south city limit of Berkeley and connects with the extension of Broadway in Oakland. This location is considered to make the best use of existing possibilities in connecting the Eastshore Freeway with the Broadway Low-Level Tunnel while disrupting to the least possible extent the existing service areas of schools, parks, playgrounds, and shopping centers in the surrounding portions of the city. Careful consideration has been given to problems created by dividing closely knit residential areas with a freeway right-of-way and to problems of land values and topography.

In addition, the plan proposes the construction of the Sacramento Expressway, a central north-south, limited-access route following the line of the present Sacramento Street but connecting with Key Route Boulevard in Albany on the north. This route will handle other than regional traffic but will be an essential connection between Oakland and the residential areas north of Berkeley.

The plan that an extension of the projected Grove Street Freeway in Oakland be carried north to a juncture with the east-west Berkeley Freeway is proposed. From the interchange at the intersection of the two freeways a surface route is provided north via Adeline Street to Grove Street, Shattuck Avenue, and (via a new street) to Fulton Street. Both Grove and Fulton Streets are major by-passes for the Berkeley Central Business District.

The improvement of Oxford and Spruce Streets into a major north-south artery will handle a certain proportion of regional traffic to and from the Charles Lee Tilden Regional Park, as well as other traffic whose origins or destinations are in the North Berkeley Hills residential areas. It is not the intention of the plan that this street be the primary entrance to the Regional Park, since it is not desirable to funnel such traffic through the hill living areas. It is suggested, rather, that other major routes serving the Regional Park System be developed, particularly from Richmond and Wildcat Canyon and from the east portal of the Broadway Low-Level Tunnel.

Major Thoroughfares. The Grove Street Freeway, proposed in the Oakland Major Streets and Highways


1 MILE
1500'
4500'
0
3000'
6000'
KEY ROUTE BLVD
CERRITO CREEK
ARLINGTON AVE
GRIZZLY PEAK BLVD
SOLANO AVE
CONORNICES CREEK
HOPKINS ST
SPRUCE ST
EUCLID AVE
EASTSHORE FREEWAY
SIXTH ST
SACRAMENTO EXPRESSWAY
GROVE ST
CEDAR ST
UNIVERSITY AVE
HEARST AVE
SAN PABLO AVE
SHATTUCK AVE
BANCROFT WAY
DWIGHT WAY
TELEGRAPH AVE
COLLEGE AVE
ADELINE ST
BERKELEY FREEWAY
TUNNEL RD
CONTRA COSTA COUNTY
UNIVERSITY OF CALIFORNIA
PROPOSED MOTORWAYS and RAPID TRANSIT
FREEWAYS
EXPRESSWAYS
MAJOR THOROUGHFARES
SECONDARY THOROUGHFARES
RAPID TRANSIT

Plan,[3] is recommended, as mentioned above, for extension into Berkeley, forming a grade-separated interchange with the Berkeley Freeway and continuing northward as a major street to connect with the Berkeley Central Business District.

The plan proposes that two major by-passes be constructed on the west and east of the Berkeley Central Business District. It is proposed that Grove Street be developed to carry traffic west of the Business District to and from the North Berkeley Hills via Monterey-Arlington Street connections. And it is proposed that Fulton, Oxford, and Spruce Streets be developed to form an east by-pass serving the University of California, the high density residential areas north of the campus, and the residential areas in the North Berkeley Hills. The by-pass route will make possible the closing of Shattuck Avenue to automotive traffic and the development of a pedestrian plaza in the heart of the Business District.

Telegraph Avenue is proposed as a major street, crossing the Berkeley Freeway at a grade-separated interchange and moving traffic between Oakland and the University and high-density residentialareas south of the campus.

Claremont Avenue is proposed for development as a major street connecting the southeast residential portions of Berkeley with Oakland.

A thoroughfare of major street standards is proposed for the foothill area, along the Piedmont Avenue-Gayley Road right-of-way between the present Tunnel Road on the south and La Loma Avenue and Cedar Street on the north. This route will provide an adequate cross-campus connection between the residential areas both north and south of the University of California. Both Euclid and La Loma Avenues on the north will serve as important secondary collector streets for the North Berkeley Hills residential area.

San Pablo Avenue is proposed as a major street, with improved channelization at important intersections and careful treatment of the parking and commercial areas so as to improve the traffic-carrying capacity of the street. San Pable Avenue will continue to serve as a major collector of traffic for the West Berkeley residential areas.

Sixth and Seventh Streets, connected to one another at Dwight Way, will serve as a major street providing access to the residential and industrial areas to the west of San Pablo Avenue. This route extends from the Berkeley-Albany line on the north to Ashby Avenue on the south, connecting with an Emeryville industrial route at its southern extremity and for the better part of its length providing a line of demarcation between the residential areas to the east of Sixth Street and the industrial section to the west.

University Avenue is proposed as a major street, with proper treatment of parking and intersection problems which today impair the use of this principal approach to the Berkeley Central Business District and the University of California.

The Sacramento Expressway will serve not only as a means of carrying traffic north and south across Berkeley, as was mentioned earlier, but also as a

---

[3]Prepared by Harland Bartholomew and Associates, 1947.

collector and distributor of traffic from and to all central areas of the city.

The Interim General Plan for Berkeley recommends the development of Solano Avenue as a major street, connecting with the north-south Alameda-Grove Street route by means of a by-pass to the south and west of the Solano Avenue shopping center. This route will provide a suitable connection from the North Berkeley Hill residential areas and the Central Business District to the cities of Albany, El Cerrito, and Richmond; to the west in Albany it is assumed that Solano Avenue will be connected with the extension of the Sacramento Expressway (Key Route Boulevard), with San Pablo Avenue, and with the Eastshore Freeway.

As noted above, Arlington Avenue, as a major street, will connect with the north-south Alameda-Grove Street route via Monterey Avenue. The Kensington residential areas will be served by this route.

In addition to the by-pass route around the Central Business District, a ring-road is proposed which would be designed to carry local traffic around the central shopping and office quarters of the Business District. It consists of Milvia Street on the west, Bancroft Way on the south, Fulton and Oxford Streets on the east (here doubling with the major east by-pass), and Hearst Avenue on the north. This "inner-circle" route is essential to the orderly reorganization of the Central Business District.

The Interim General Plan proposes three major streets carrying local traffic east and west within the city boundaries. Two of these, Dwight Way and Cedar Street, extend from Piedmont Avenue and La Loma Avenue, respectively, to Sixth Street and San Pablo Avenue, respectively. They are intended partially to relieve the traffic burden which would otherwise fall upon University Avenue. The third is the Hopkins-Gilman route, extending from The Alameda to the Eastshore Freeway; with Cedar Street this thoroughfare will facilitate circulation between the North Berkeley Hills residential areas and the western portions of the city.

Secondary Thoroughfares. The secondary streets proposed in the plan are, with few exceptions, intended to serve as subsidiary collectors of traffic to serve the various parts of the city between thoroughfares of a higher order. Therefore, except in two cases, these secondary streets may be merely listed in reference to the plan as follows:

East-West Secondary Streets:
- Alcatraz Avenue, from College Avenue to San Pablo Avenue (partly in Oakland)
- Ashby Avenue, from Domingo Avenue to San Pablo Avenue
- Bancroft Way, from Piedmont Avenue to San Pablo Avenue
- Derby Street, from Warring Street to San Pablo Avenue
- Hearst Avenue, from Gayley Road to Milvia Street
- Rose Street, from Oxford Street to Grove Street

North-South Secondary Streets:
- College Avenue, from Bancroft Way to Oakland
- Colusa Avenue, from El Cerrito to Solano Avenue
- Euclid Avenue, from Grizzly Peak Boulevard to Hearst Avenue
- Grizzly Peak Boulevard, along its entire length

The two exceptional cases lie in the North Berkeley Hills residential area. The first is the improvement of the La Loma Avenue-Shasta Road route to the rapidly developing residential areas in the southern portions of this hill sector. The other is the proposed Indian Rock Avenue-Santa Barbara Road-Cragmont Avenue connection between this sector of the hill residential areas and Solano Avenue. Both of these proposals are highly essential to the proper movement of traffic to and from the hill areas; they have been classified "secondary" only because of the relatively small numbers of vehicles which will use them.

Parking. As a partial solution to the parallel problem of providing storage space for vehicles using the motorways of the city, the plan proposes that the land immediately adjacent to the inner-circle route surrounding the Central Business District be reserved for the erection of parking structures. In this way the more valuable and more intensively used land comprising the district will be surrounded by parking facilities which will tend to insure that the value of the property and that the vitality of the commercial activity will be protected.

In a similar manner, the plan proposes that each of the intermediate shopping centers and each of the local shopping centers shall be provided with off-street parking facilities in sufficient quantities as to meet anticipated normal parking demands.

The major single traffic generator in the city is the University of California. At the present time on-campus parking facilities are highly inadequate to meet the total demand for parking space, and the overflow extends for many blocks to the north and south of the campus. It is anticipated that parking structures on the perimeter of the campus will be constructed and that a significant portion of the total demand can be accommodated in this way.

The industrial areas, like the University, attract large numbers of vehicles which are parked on the streets for long periods of time, thus limiting the carrying capacities of the streets. Since it is especially important that the paved areas of the streets in the industrial area be available for the movement of the heavy trucks which service the industrial firms, the plan proposes that each firm should provide off-street parking areas sufficient to meet the needs of its own operations.

With the development of increasing residential densities in some areas of the city, the availability of off-street storage space for the automobiles of the residents has been steadily decreasing. In the hill areas where topographical factors greatly limit the flexibility of construction, many houses have been built without provision having been made for off-street storage of automobiles. In each of these areas the problem is an important one; in the former, traffic volumes tend to be great on the local streets, due to the residential densities; in the latter, the widths of the contoured streets are limited by topographical factors, and parked cars greatly reduce the usable right-of-way. In both cases the Interim General Plan proposes that property owners should be required to provide off-street parking areas sufficient to meet the needs of the residents.

But it is not possible to provide off-street parking facilities in the areas of major traffic generation for all the automobiles which seek storage there. The basic solution to the parking problem will probably be found in the alternative media of transportation offered by public transit.

# I. TRANSIT

## Introduction

The prosperity of the modern city is largely dependent upon the quality of the transit system which serves its citizens. It is especially necessary that a thoroughly adequate transit system be developed within a large metropolitan complex in which large numbers of persons move daily among the various portions of the metropolitan area. The transit system thus becomes an adhesive, as it were, which helps to bind the physical metropolis into an economic and social entity.

This truism has been recognized by every city in the United States, and each has a public transit system in operation within its boundaries. The metropolitan centers, which often comprise a large number of separate jurisdictions, have also recognized this fact; and the municipalities have jointly participated in the establishment of metropolitan-wide transit systems. During the latter part of the nineteenth century, New York, London, Paris, Boston, and other metropolises further recognized the need for the development of transit systems which would be capable of high speeds and which could nonetheless be operated with safety. Engineering-wise, this meant grade-separated systems which operated on steel rails; and each of these metropolitan areas installed subway and/or elevated train systems. Other cities, including those comprising the San Francisco metropolis, continued to employ surface vehicles.

The advent of the popularly-priced automobile created a number of problems which have again directed citizen thinking toward consideration of the relative advantages and disadvantages of rapid transit as the backbone of the urban circulation system. The nineteenth century and early twentieth century subways and elevated trains brought with them a series of often-depressing urban traits. The subways were (and frequently are) noisy, dark, crowded, and dirty. The elevated structures were sometimes placed in the middle of city streets; and being massive networks of steel members, they deprived the neighboring buildings of light and air and subjected them to the loud noise and the earth tremblings which have become their trademark. Urban blight became their neighbors; and the depreciation of property values associated with the blight raised serious questions concerning the over-all economic value of the transit systems themselves.

But with the coming of intensive use of the automobile, the questions have received at least one definitive answer. For it is physically impossible to move as many people in as short a time by automobile as it is to move them by rapid transit vehicles.

The crowding which occurred in the New York subways and elevated trains, as the most outstanding American example, induced many persons to use their private automobiles in going to and from their places of employment and recreation. The effect is, of course, that the city streets have become clogged with automobiles to the point at which traffic is slowed to an inordinate degree. The problems associated today with traffic congestion in the streets of the average American city are widely recognized. Every city in the nation is presently engaged in an active attempt to ameliorate

the problems by the provision of parking places, one-way street systems, freeways, signalized boulevards, etc. And although a well designed motorways system may greatly relieve the pressing problem, in many cities and metropolitan centers it cannot solve it alone.

Freeways, like elevated-train structures, may invade residential areas and impose heavy volumes of noisy traffic upon an otherwise quiet district. The freeway systems, when supplemented by other devices to facilitate automotive traffic flow, probably have the effect of further encouraging the use of private automobiles, and thus tend to intensify the problem which they were designed to alleviate. The government agencies charged with the responsibility of constructing motorways of various types thus find themselves involved in a race for a carrot; no sooner is a freeway constructed than the volumes which it is forced to carry require that a parallel freeway be built.

The inconveniences which have come to be associated with urban automotive travel have induced large percentages of the urban populations to turn to the various forms of public transit. And most of the transit passenger-miles traveled in the United States have occurred in surface vehicles of various sorts.

The history of the surface transit vehicle is familiar to all: the horse-car, the cable-car, the electric trolley, the interurban train, the gas-powered bus, and the trackless trolley. Also familiar to all is the recent trend away from electrically-powered vehicles to the gasoline- or diesel-powered bus. So marked has the trend to self-propelled vehicles become that it is commonly believed that the bus is the most modern form of transit vehicle available at the present time. And the trend is generally regarded with mixed emotions; for insofar as the bus has made possible the removal of street tracks, it has increased the ease and safety of automotive travel; and insofar as the increasing numbers of busses must compete with automobiles on the city streets, they have become the nemesis of the motorist.

Berkeley's Present Transit System

Public transit service for residents of the East Bay is offered by Key System Transit Lines, which operates interurban busses and electric trains between East Bay points and San Francisco and provides service within and among the various East Bay cities by a fleet of gasoline and diesel busses.

Trans-Bay Service. The largest volume of passengers between the East Bay and San Francisco are carried on up to 88 articulated electric trains of the Key System. Each train unit, composed of two cars, seats 132 passengers and has a standing capacity of 50 additional passengers. The units may be operated separately or as parts of trains comprising up to three units. Electric power is fed by overhead lines in the East Bay and by a third rail in bridge operation. The bodies of the cars were rebuilt fifteen years ago utilizing heavy undercarriages salvaged from older equipment; and the resulting over-all weight of the units combined with their low power limits the operating speed of the trains over the San Francisco-Oakland Bay Bridge to approximately 38 miles per hour. Portions of the rights-of-way over which the trains operate are utilized by the electric trains only; the major portions of the routes utilize city streets. With the exception of the portions of the route west of the interchange at the eastern

end of the Bay Bridge, almost all crossings are at street grade.

Of the five interurban train routes connecting the East and West Bay, two make connections with Berkeley. The "F" train enters Berkeley on Adeline Street at the southern city limit and travels north on Adeline Street and Shattuck Avenue to Rose Street where it enters its own right-of-way and proceeds through a tunnel at the Circle to its terminus at Solano Avenue and The Alameda. The route thus traverses the city in a north-south direction for almost the entire length of the city. With stops located approximately six blocks apart and with a bus-train terminal at Shattuck and University Avenues, the train is thus able to serve a significant portion of the city, including the Central Business District and the University. The "F" train runs at ten-minute intervals during peak hours; during the remaining hours of the day it operates at twenty-minute intervals; during the evenings and on Sundays, it operates at thirty-minute intervals; and after 2:00 a.m. no service is provided. Running time between Solano Avenue at The Alameda and the San Francisco Terminal at First and Mission Streets varies between 38 and 41 minutes.

The "E" train enters Berkeley on Claremont Avenue at the southern city limit, and runs about two-thirds of a mile within Berkeley, serving but a small corner of the city's area. Its terminus is at the juncture of Claremont and Ashby Avenues, adjacent to the Claremont Hotel. During peak hours it operates at fifteen- and twenty-minute intervals; during the week-day off-peak hours it operates on a forty-minute interval schedule; during the evenings and on Sundays and holidays hourly service is provided.

Two bus routes link Berkeley with San Francisco, the "G" bus operating on Solano and San Pablo Avenues, and the "H" bus operating along Ashby Avenue and Sacramento Street. The busses operate at between two- and five-minute intervals during peak hours and between 30 to 45 minutes during off-peak daylight hours. Evening service to San Francisco is provided by local busses operating as connecting links with the "F" train.

East-Bay Transit Service. The Key System Transit Lines operates a fleet of 669 free-wheeled vehicles of which 340 are new diesel- or gasoline-powered busses acquired since 1946. Seating capacity per vehicle varies between 41 and 44 seats. Off-peak service is provided with the newer equipment, and peak-hour service is rendered by employing the entire fleet. The new diesel busses accelerate and stop more rapidly than did the obsolete streetcars which they replaced in 1948, but their operating standards do not meet those of the latest model trolley-coaches and streetcars.

Interurban service among the East Bay cities is provided primarily by the gasoline and diesel busses. Eight bus routes provide transit service between Berkeley and Oakland, each bus route approximately coinciding with the route of a major thoroughfare. Schedules vary between two- to ten-minute intervals during the off-peak daylight hours; evening service is provided at intervals of from 20 to 40 minutes.

Seven local bus routes operate within Berkeley, serving as cross-town carriers (running east and west), as feeders to the interurban routes, and as links between the residential, commercial, industrial, and educational centers of the city. The schedules are designed to provide bus service

at from five- to ten-minute intervals during the peak hours and at intervals of from 20 to 30 minutes during daylight off-peak hours. Weekend and evening service is less frequent, and on some routes no service is available during these periods. No local service is provided on an all-night basis.

Berkeley's Public Transit Requirements

The physical integration of the various jurisdictions of the Bay Region and the fact of the economic and social interdependence of the communities which comprise the metropolis make it imperative that the transit systems which service the separate portions of the area be integrally linked with all other parts of the regional transit network. The high rate of commuter travel among the many cities makes it necessary that persons be able to move from part to part of the region easily and with a minimum number of transfers. And the fact of the increasing geographical extent of the urbanized portions of the region requires that transit service be as rapid as is mechanically possible.

This need for a region-wide rapid transit system is widely recognized today, and at the moment a number of local and state-sponsored committees are studying the problems involved in the construction of such a system. It is not possible for any one city to design its own system; but it is possible for any given city to state its own specific requirements and to make suggestions with respect to the routings of the various media which the regional system will provide within the boundaries of the specific city.

The transit requirements of the City of Berkeley are relatively simple and the routings are relatively clear. The Interim General Plan attempts to describe those requirements and to demonstrate the ways in which the transit system can relate to and help to integrate the various land using and circulation activities which will take place in the city in the future.

Rapid Transit. Because Berkeley's citizens cannot all work within Berkeley and, hence, because Berkeley will continue to serve as the home of persons who work in the other areas of the metropolis, it is necessary that Berkeley be tied to the metropolitan centers and to the outlying areas by a transit system which is capable of moving large numbers of persons long distances in the shortest time possible. The accepted modern standards for such a rapid transit system specify that the vehicles should be electrically powered, should operate on fixed rails in their own rights-of-way, should be completely separated from all other types of traffic, and should stop at intervals of no less than one-half mile. A system of this type is today capable of average speeds up to 40 miles per hour, including stops, as compared with maximum average speeds of 20 miles per hour possible with existing equipment.

Although the initial construction costs of a rapid transit system are high, the compensations to passengers as measured in terms of time saved and in terms of convenience are great. The compensations to the municipalities and to the state are likewise great, for the concomitant lessening of automotive traffic may greatly reduce the expenditures which will be required in the future for improvements in motorways of various types.

A rapid transit system serving Berkeley should offer direct service to Oakland and the

municipalities to the south, to Richmond and the municipalities to the north, to the communities in the interior of Contra Costa County, and to the West Bay communities in the Peninsula, San Francisco, and Marin County. Ideally, the same vehicles which pass through Berkeley should be capable of continuing on to all other portions of the Bay Area. At least one route through Berkeley is desirable in the immediate future.

Interurban Surface Transit. The urban pattern of the East Bay communities is such that there is not a single core associated with each political subdivision. Rather, the entire development comprises a single urban complex which contains a large number of functional centers which attract large numbers of persons. A rapid transit system could accommodate a large proportion of the persons who wish to travel from one center to another, but it could not possibly connect all the various subcenters directly. It will therefore be necessary for a supplementary network of surface vehicle routes to link the rapid transit system with the numerous foci of activity within the East Bay urban area. The inherent flexibility of the self-propelled bus will continue to recommend its use for short trips in areas which are not serviced directly by the rail system, and in many cases the bus routes will be interurban in character.

Local Transit Service. The success of the rapid transit system and of the interurban surface system will depend in large measure upon a network of local routes which can serve as feeders to the longer-distance carriers from the local residential areas. These busses can continue to provide cross-town service and short-distance local service throughout the city.

Principles for Transit Planning.

1. The entire public transit system serving a metropolitan region should be coordinated throughout the entire geographical area of the region in order that the maximum speed and convenience of travel may be attained at the minimum cost.

2. A transit system serving a metropolitan area should be regarded primarily as being a necessary utility essential to the welfare of the metropolis and secondarily as being a self-supporting enterprise.

3. The various types of vehicles utilized in the transit network should be employed in their specialized capacities with integrated schedules, in order that the separate media may be operated in their fields of greatest economy and utility and that the entire system may operate with the minimum of waste and duplication.

4. The establishment of routes for the various media of the transit network should be made with careful consideration of the effects of those routes in the shaping of the other future land uses in the areas served and of the effects of the future development of the land upon the transit network itself. Thus, ideally, the transit network should be designed in accordance with a comprehensive metropolitan plan.

Proposals of the Interim General Plan

The keystone of the mass transport system proposed in the Interim General Plan for Berkeley is a link of a regional rapid transit system which enters

Berkeley via the Grove Street Freeway and passes through the city approximately along the route of the existing "F" train. This rapid transit route will connect Berkeley with Richmond and the other North Bay cities and with Oakland and the other cities along the East Bay. Rapid transit facilities will also connect Berkeley directly with San Francisco and from there with the cities of the Peninsula. Through other regional connections, they will in turn connect Berkeley with the communities in the interior of Contra Costa County and in Marin County.

Modern standards for rapid transit systems specify that the vehicles shall be electrically powered, operate on fixed rails along grade-separated rights-of-way, and shall stop at intervals preferably no less than one-half mile apart. The terminals in the main Berkeley link of the rapid transit network are to be located along Adeline Street and Shattuck Avenue in the areas proposed for high-medium density residential use, and at the Central Business District where service can be provided for persons going to and from the commercial quarter, the University, and the Civic Center. Additional terminals are proposed serving the Adeline-Alcatraz Shopping Center, the Shattuck-Vine Shopping Center, the Circle, and the Solano Avenue Shopping Center. The trains will proceed from the Solano terminal to points in Albany, El Cerrito, and Richmond.

It is proposed that a system of surface transit vehicles shall supplement therapid transit system, affording connecting service with the trains, additional short trip service to neighboring communities, and local service to the residential, commercial, industrial, and educational areas of the city. The routings for surface vehicles are not noted in the Interim General Plan; it is intended, however, that they will generally follow the patterns of major and secondary thoroughfares, feeding into the various functional centers of the city and connecting with the rapid transit system at the terminal points indicated above. It is anticipated that the proposed comprehensive transit and motorways systems will greatly facilitate the movement of persons and goods throughout Berkeley and will thereby appreciably enhance the economic and social life of the city.

# CHAPTER 7

## ARCHITECTURAL STUDIES OF DEVELOPMENTAL POSSIBILITIES, ACCOMPANYING THE INTERIM GENERAL PLAN FOR BERKELEY

### Introduction

The role of the graduate students in architecture in this collaborative study was that of consultants whose task it was (1) to analyze the functional and aesthetic characteristics of the physical site of Berkeley and of the physical development which has taken place upon that site, and (2) to make recommendations to the city planning students concerning the types and patterns of physical development which might improve both the functional and aesthetic qualities of the city in the future. Their analyses and their recommendations have helped to shape the Interim General Plan in all its aspects.

Upon the completion of the development of the plan, the architectural consultants then turned their attention to the illustration of certain key features or proposals of the plan. The purpose of these supplementary illustrations to the plan is to convey the architects' personal impressions of Berkeley's potential appearance and character, as they might conceivably develop, if the city were to evolve generally in accordance with the major proposals set forth in the plan.

The architectural developmental studies are not an actual part of the Interim General Plan for Berkeley; they are exploratory studies based upon the plan. The plan is limited to broad qualitative and locational approximations--its purpose is to provide a framework for the development of the major physical features of the city.

But because the plan itself is, necessarily, very general in nature, the detailed studies conducted by the architectural group are a very valuable adjunct to it. It is clearly outside the province of the planning agency to propose detailed engineering and architectural studies of the type which are illustrated below, and no recommendations are made concerning any of the specific aspects of the sketches which are presented here. Nevertheless, the architectural studies do suggest in three-dimensional terms the kinds of development which might possibly occur within the framework established in the Interim General Plan. In a very real sense, the meaning of certain proposals of the plan may be read in the light of the developmental studies; the basic principles and the basic proposals underlying both are the same.

### The Developmental Studies

Six architectural developmental studies were undertaken, one study by each participating graduate student in architecture. These students themselves, together with the two faculty coordinators and the student director of planning, made the original decisions regarding the nature of the studies to be presented; subsequent to the definition of the problems, each of the architectural students wrote his own program for problem solution. Upon approval of this program by the faculty coordinators, each student proceeded to complete his study.

The six studies were subject to three basic requirements. First, they were to conform to the broad physical framework as set down in the Interim General Plan. Second, they were to conform to the framework of planning principles which had shaped the plan. And third, they were to illustrate development which could reasonably be expected to occur within the foreseeable future.

The illustrations in the pages which follow are the key drawings from a larger exhibit of the six architectural developmental studies; they include, however, the most significant material which each study produced.

Plates 17 and 18: Housing--A Study in Zoning and Densities. This study is intended to illustrate the meaning of the proposed net residential densities in Berkeley and the manner in which the planned densities might be realized through a type of residential zoning hitherto unpracticed in American cities. The study explains, with illustrated examples of the kinds of dwelling structures which might be developed on lots of typical sizes, the many ways in which the densities proposed in the Interim General Plan may be realized. The plan recommends that development in residential areas shall be controlled by placing limitations upon population densities, rather than upon residential structural types. Thus, the architectural developmental study illustrates the mixed building types (ranging from single-family structures to apartment buildings) which might be developed in any of the four density ranges proposed in the plan. The variables which control the maximum number of dwelling units per lot are the density district and the size of the lot. Given a lot of sufficient size, any type of residential structure may be developed in any density district. The distances between buildings and the heights of buildings are controlled by a unique scheme which controls light, air, and privacy. The conventional set-back lines have been eliminated.[1]

Plates 19 and 20: Hill Area Study. Two parts comprise this study. The first portion shows a defined living area in the North Berkeley Hills--to the north of Shasta Road and just below the ridge--and indicates one way in which it might desirably develop within the next generation, functionally and aesthetically. A variety of possible dwelling types, mostly of one- to four-family type structures, are suggested; improvements are outlined for the systems of streets and pedestrian walks; and much concern is shown for the over-all aesthetic potentialities of this living area. The second part of the study is devoted to a presentation of a suggested shopping center, located on the east side of Grizzly Peak Boulevard to the north of Shasta Road. The purpose of this part of the study is to illustrate one way in which such a center might provide hill-area residents with the conveniences of needed shopping facilities and, at the same time, improve rather than adversely affect the present amenities and aesthetic qualities of the hill residential areas.

Plates 21 and 22: Rapid Transit--Monorail. This study offers an interpretation to the proposal of the Interim General Plan for Berkeley for a

[1] An account of the basic scheme employed in this architectural developmental study appears in the Magazine of Building, July, 1951.

grade-separated rapid transit route, traversing the city along the approximate line of the present "F" interurban train route. The study is concerned with overhead suspended monorail as a possible form which such a rapid transit facility might assume. Presentation is made of (a) the architectural character of a central transfer station at University and Shattuck Avenues, with plan, section, and perspective drawings of the structure; and of (b) a local station, situated at Shattuck Avenue and Rose Street, serving the Shattuck-Vine shopping center and the surrounding residential areas. In brief the study provides an additional basis by which this form of rapid transit may be compared to the more conventional, accepted types, and by which the applicability of both forms to Berkeley's rapid transit needs may be weighed.

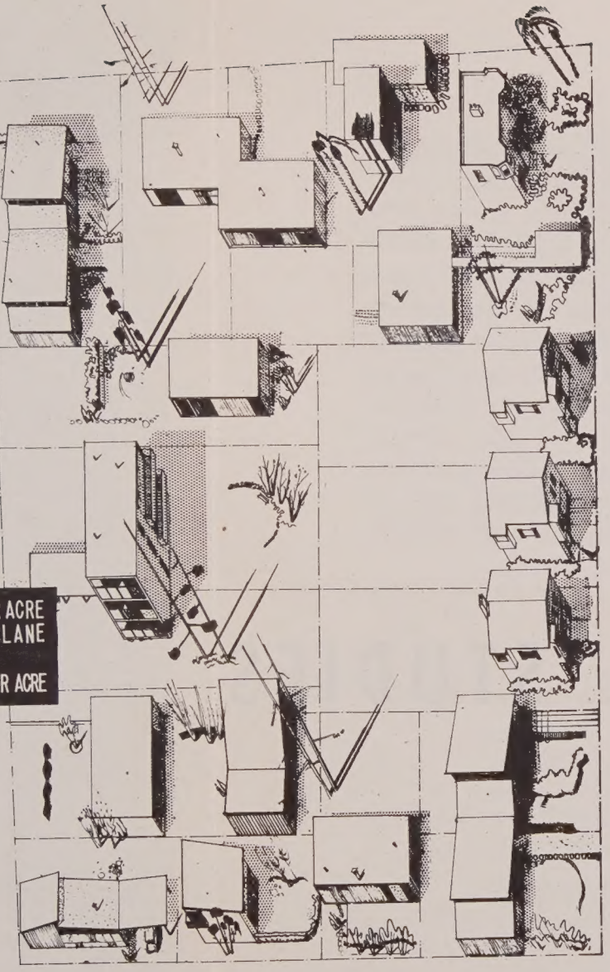
Plates 23 and 24: Bay Front Study. Berkeley possesses today large areas of submerged tidelands, potentially reclaimable and useful. A possible solution to the problem of how best to use these lands is presented in this study, which emphasizes the way in which the area might be reclaimed for industrial, residential, and regional recreational purposes. The last-named function is most highly stressed; called-for is a University stadium and an island-type development including an exposition hall and exhibition buildings, a hotel for conventions, a yacht harbor and club, a crew course and various sports facilities for the University of California. beach and swimming areas, restaurants, picnicking areas, a commercial amusement center, and sightseeing and water taxi services. With a location so central and so easy of access from all parts of the Bay Region, it is felt that a development of this general type is most appropriate for Berkeley's waterfront.

Plates 25 and 26: Civic Center. The Interim General Plan for Berkeley indicates an area the size of several present city blocks in which various cultural, educational, and governmental administrative facilities of a city-wide nature are to be concentrated. The purpose of this section of the architectural developmental studies is to show the way in which this area might be developed within the framework of the Interim General Plan. In the final stage of development, as presented in this study, are included a central plaza, raised and extended over Grove Street to a new City Hall; a visitors' center; a combination library, museum, and art gallery; lagoons and water areas reclaiming and utilizing Strawberry Creek and connecting the Civic Center with the Central Business District to the east; and appropriate provisions for vehicular parking beneath the raised plaza. The suggested development is carefully related to the present Berkeley High School and Community Theater, and allows for the preservation of many of the more important structures now in the vicinity.

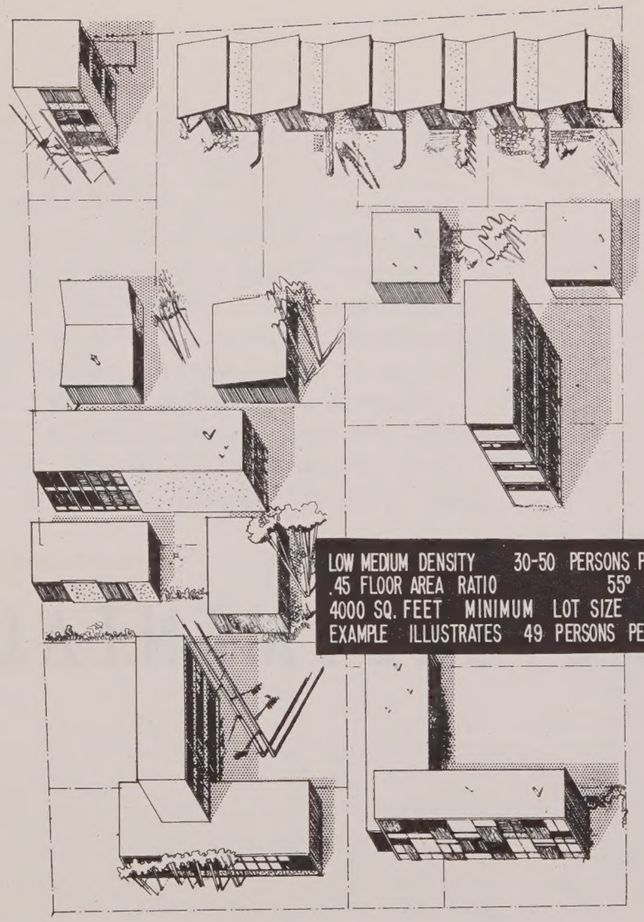
Plates 27 and 28: The Central Business District. This study is concerned with the nature of the shopping quarter of the Berkeley Central Business District, as it might appear if developed in accordance with the basic proposals of the Interim General Plan for Berkeley. The study is coordinated with those of Rapid Transit and the Civic Center and suggests a scheme for gradual functional reorganization of a part of the city's core, in order that the central shopping area of Berkeley may operate more efficiently and provide

a continuous and varied aesthetic experience to those who will use it. Dominant is a central square or plaza at Shattuck Avenue and Center Street, opening into the Civic Center to the west and to the University of California Campus on the east, and adjoining the rapid transit transfer station to the north. Surrounding and extending from the square are a department store, several groups of smaller shops, office structures, and a hotel center. Ample automobile parking and truck delivery facilities are located on the periphery of the area: all autos and trucks are to be excluded from the central part of the district, freeing the core of the shopping area between University Avenue and Bancroft Way exclusively for pedestrian use. In short, Berkeley's central shopping quarter has here been portrayed as a virtual precinct--an enclosed area, devoted to related functions and from which through traffic has been purposely debarred. The Berkeley Central Shopping Area might thus become an unprecedentedly attractive and well-functioning unit and a decided asset to the community and the entire Bay Area.

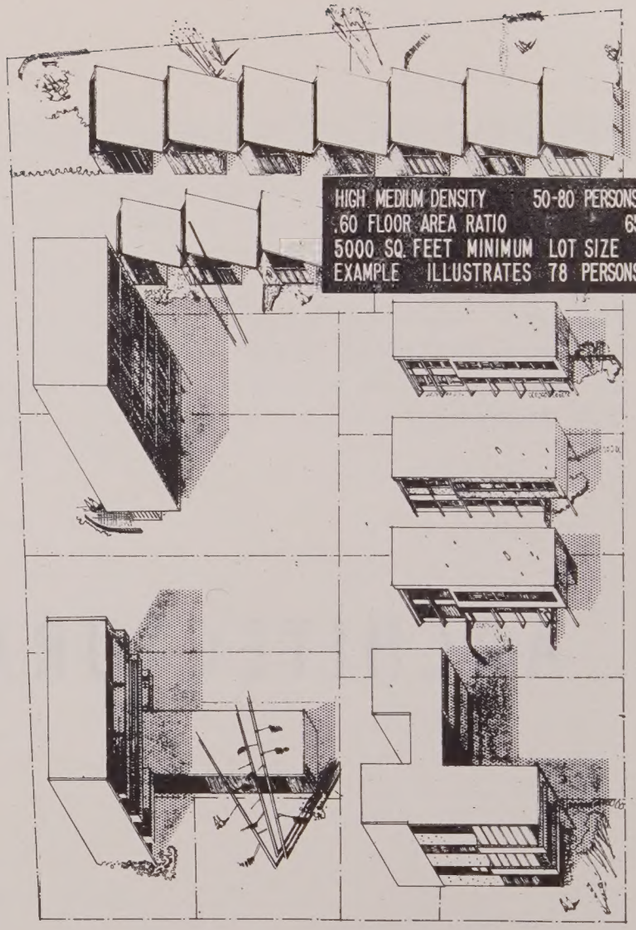
# THE ARCHITECTURAL DEVELOPMENTAL STUDIES



LOW DENSITY 0-30 PERSONS PER ACRE
.30 FLOOR AREA RATIO 45° PLANE
3000 SQ. FEET MINIMUM LOT SIZE
EXAMPLE ILLUSTRATES 29 PERSONS PER ACRE

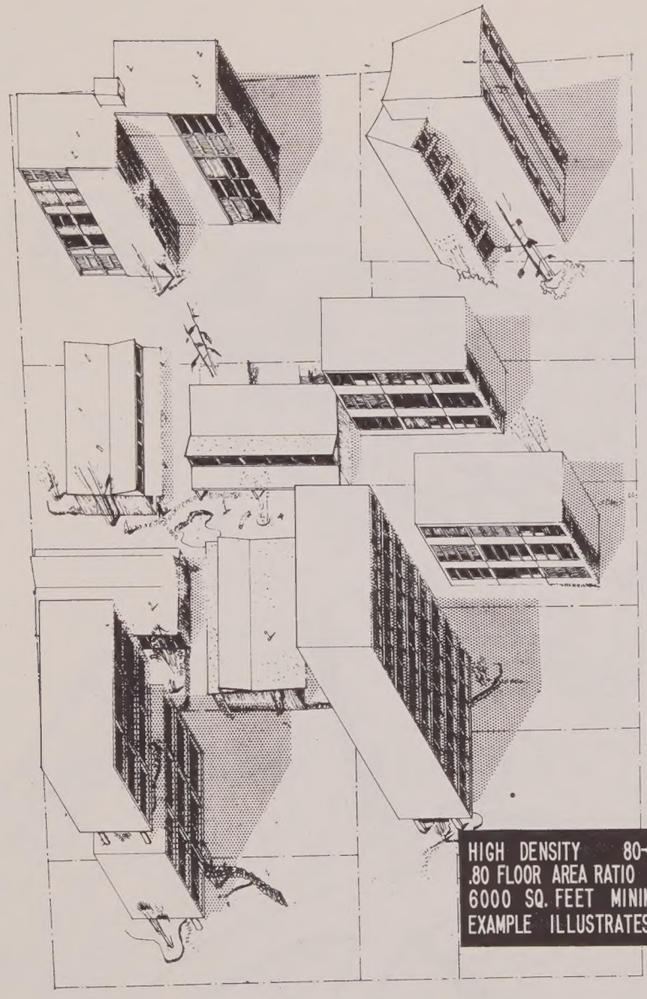


LOW MEDIUM DENSITY 30-50 PERSONS PER ACRE
.45 FLOOR AREA RATIO 55° PLANE
4000 SQ. FEET MINIMUM LOT SIZE
EXAMPLE ILLUSTRATES 49 PERSONS PER ACRE

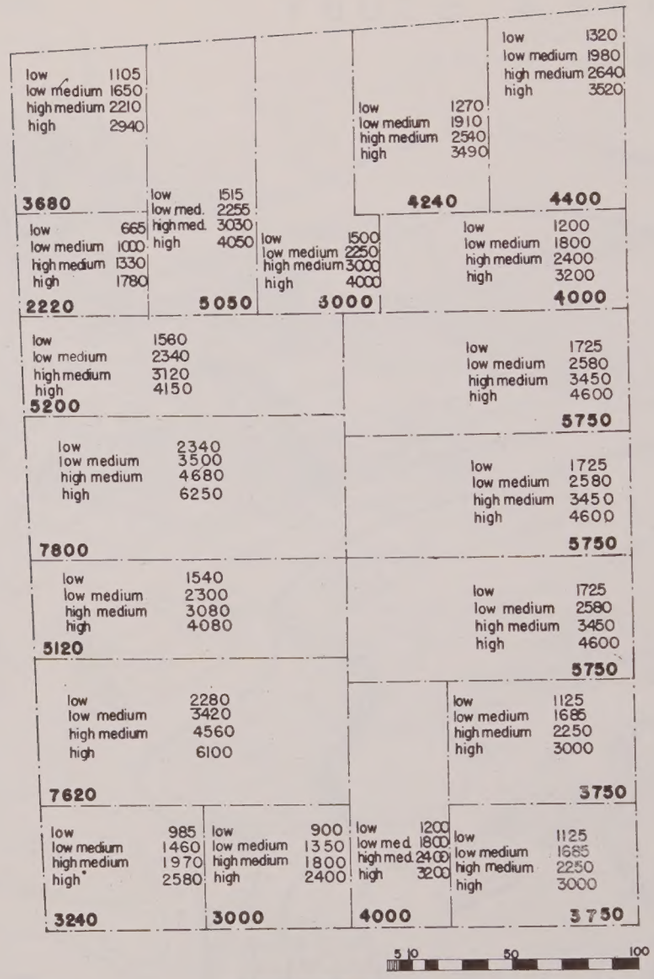


HIGH MEDIUM DENSITY 50-80 PERSONS PER ACRE
.60 FLOOR AREA RATIO 65° PLANE
5000 SQ. FEET MINIMUM LOT SIZE
EXAMPLE ILLUSTRATES 78 PERSONS PER ACRE

# HOUSING: A STUDY IN ZONING



HIGH DENSITY 80-125 PERSONS PER ACRE
.80 FLOOR AREA RATIO 75° PLANE
6000 SQ. FEET MINIMUM LOT SIZE
EXAMPLE ILLUSTRATES 124 PERSONS PER ACRE




TOTAL BLOCK AREA: 2.1 ACRES
AVERAGE FAMILY SIZE: 2.3 PERSONS
1000 SQ.FT. MIN. FOR SINGLE FAMILY DWELLINGS
800 SQ.FT. MIN. FOR 2-5 FAMILY DWELLINGS
600 SQ.FT. MIN. FOR MULTIPLE FAMILY DWELLINGS

IN ORDER TO achieve a better integration of housing masses with the physical elements,

IN ORDER TO obtain a diversification of masses benefiting not only the immediate inhabitants of an area, but the city as a whole,

IN ORDER TO achieve more open space per dwelling,

IN ORDER TO serve the needs of many different kinds of families within a confined area,

IN ORDER TO achieve a variety of building intensities, providing sites where many different builders and investors, large and small, could participate in the manner they prefer and for which they are best prepared,

IN ORDER TO reduce the need for extensive special variances and to throw more responsibility on the residents and in turn the architect,

IN ORDER TO encourage a better social consciousness,

IN ORDER TO provide more flexibility and fuller utilization of property,

IN ORDER TO effect a more direct relationship between building intensities and population densities,

IN ORDER TO carry through effectively the density limitations as set down in the BERKELEY GENERAL INTERIM PLAN,

## THE FOLLOWING PRINCIPLES OF CONTROL ARE SUGGESTED:

RATIO OF FLOOR AREA TO THE SIZE OF LOT, EMBRACING ALL COVERED AREA INCLUDING GARAGES, CARPORTS, SHEDS AND PORCHES.

LIGHT ANGLE ABOVE 10 FT. NO STRUCTURE MAY BE BUILT OUTSIDE A PLANE SLOPING INWARD FROM THE PRESCRIBED ANGLE BEGINNING AT A LINE 10 FT. ABOVE THE NATURAL GRADE AT THE PROPERTY LINES.

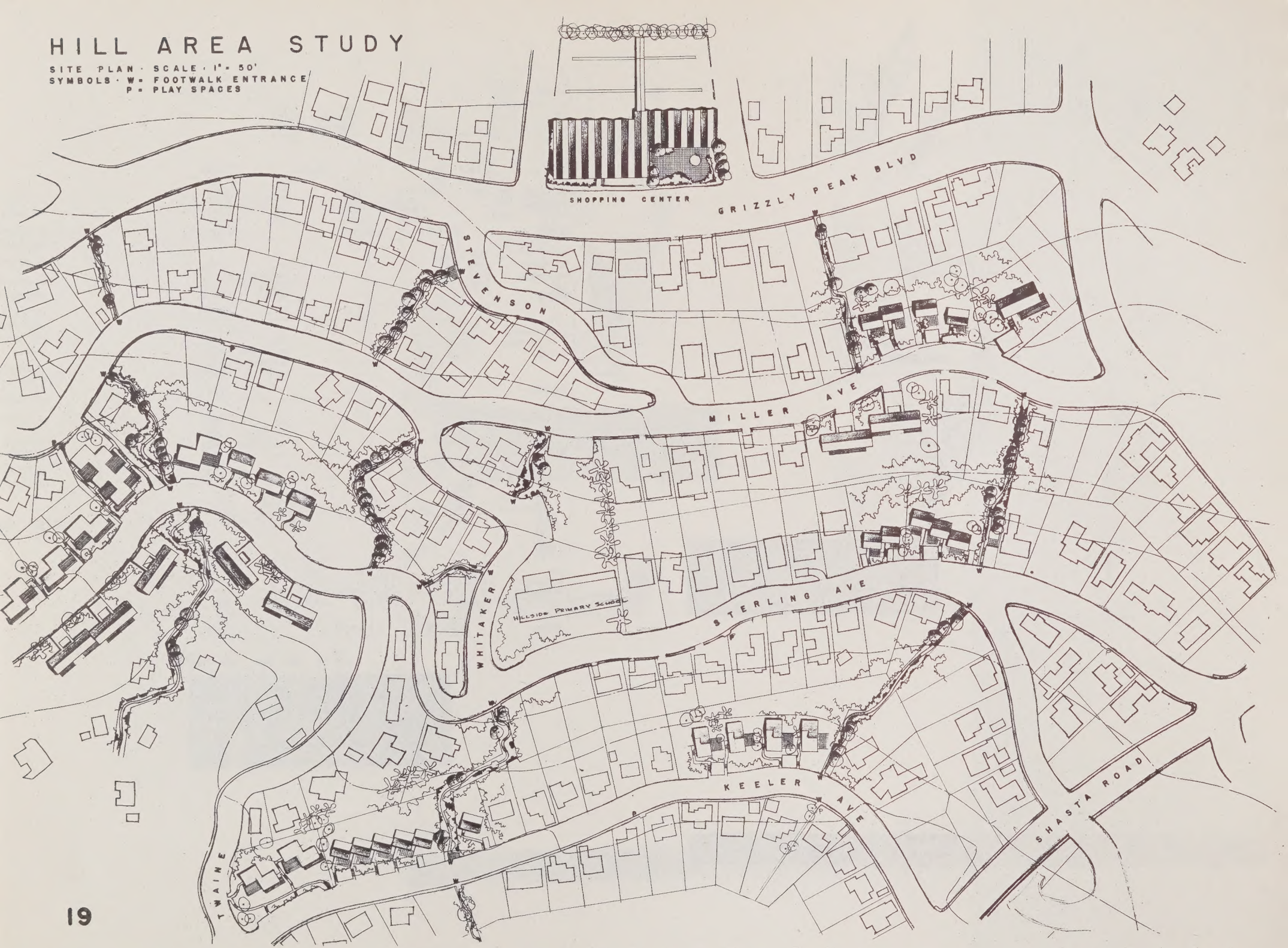
WINDOWS IN RELATION TO PROPERTY LINE. WHERE FACING PROPERTY LINES EXCEPT ON STREET SIDE, THE SILL OF WINDOWS SHOULD NOT BE BELOW A 45° PLANE SLOPING DOWNWARD AND INWARD FROM A LINE 10 FT. ABOVE GRADE ON PROPERTY LINE.

MINIMUM LOT SIZES FOR RESIDENTIAL LAND USE SHOULD BE ESTABLISHED AS INDICATED.

# AND DENSITIES

# HILL AREA STUDY

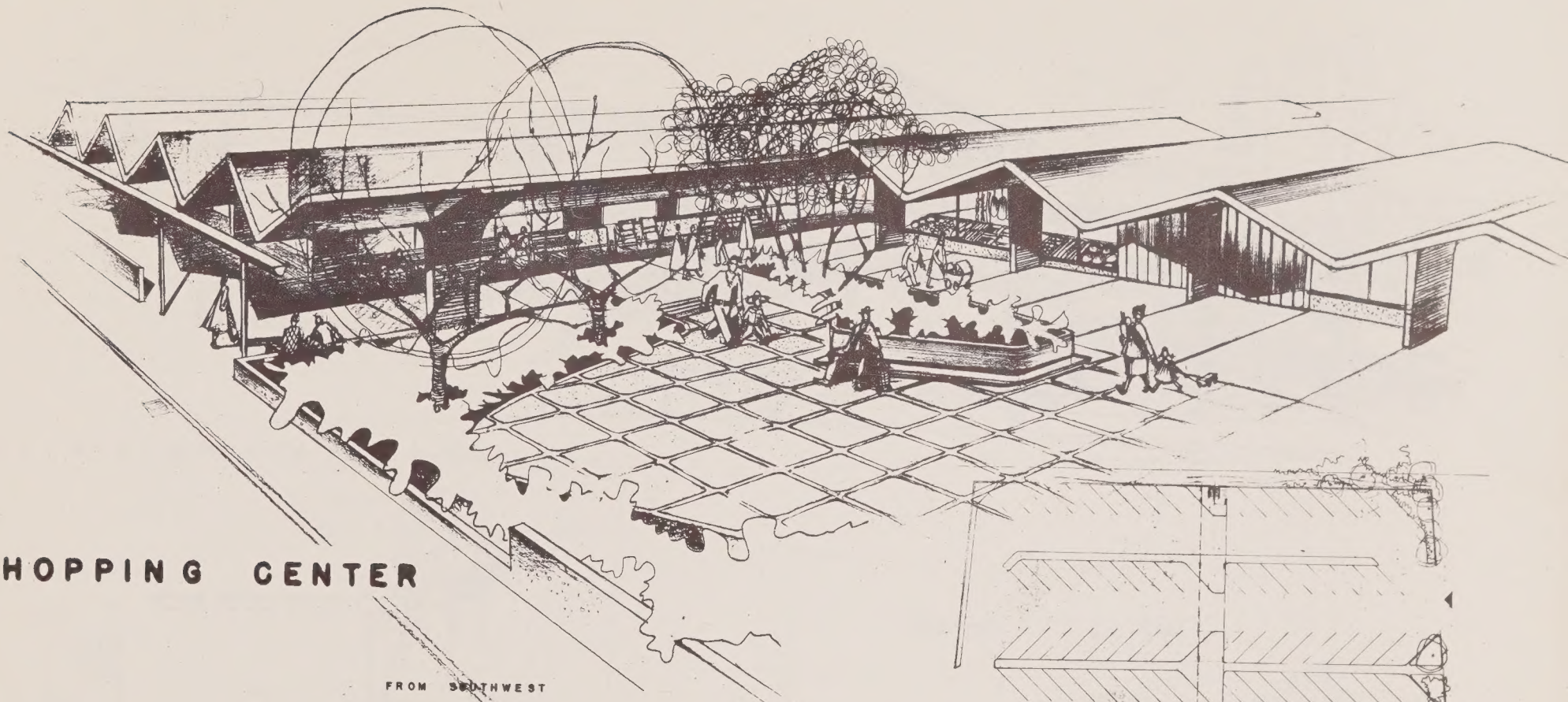
SITE PLAN · SCALE · 1" = 50'
SYMBOLS · W = FOOTWALK ENTRANCE
P = PLAY SPACES



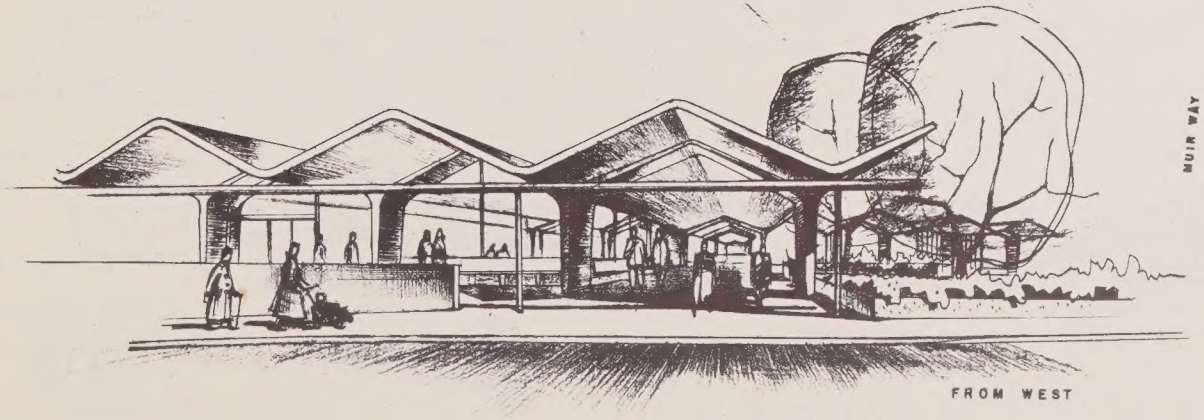

19

ARCHITECTURAL DEVELOPMENTAL STUDIES
AN INTERIM GENERAL PLAN FOR BERKELEY GRADUATE STUDENT PROJECT UNIVERSITY OF CALIFORNIA 1952

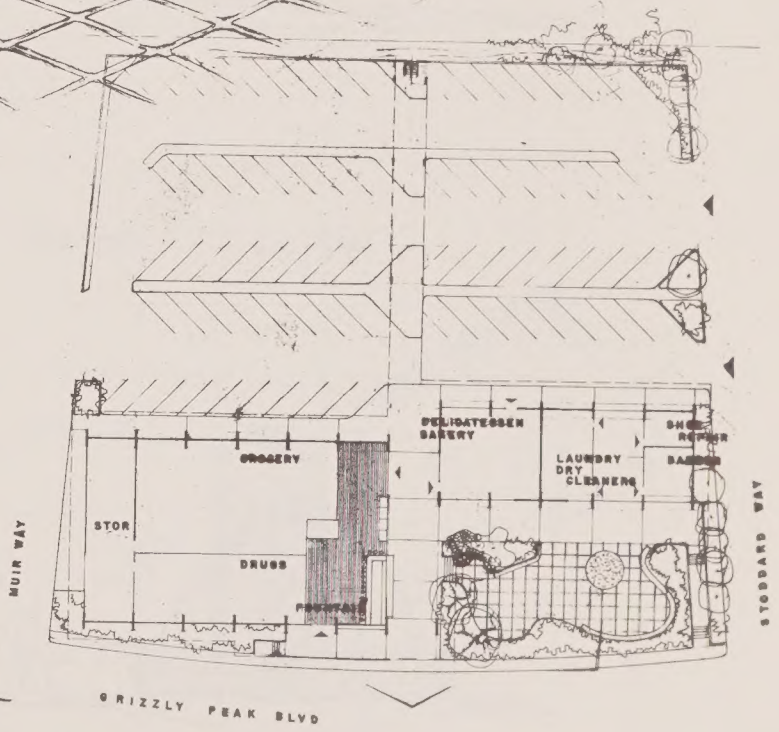
# SHOPPING CENTER



FROM SOUTHWEST

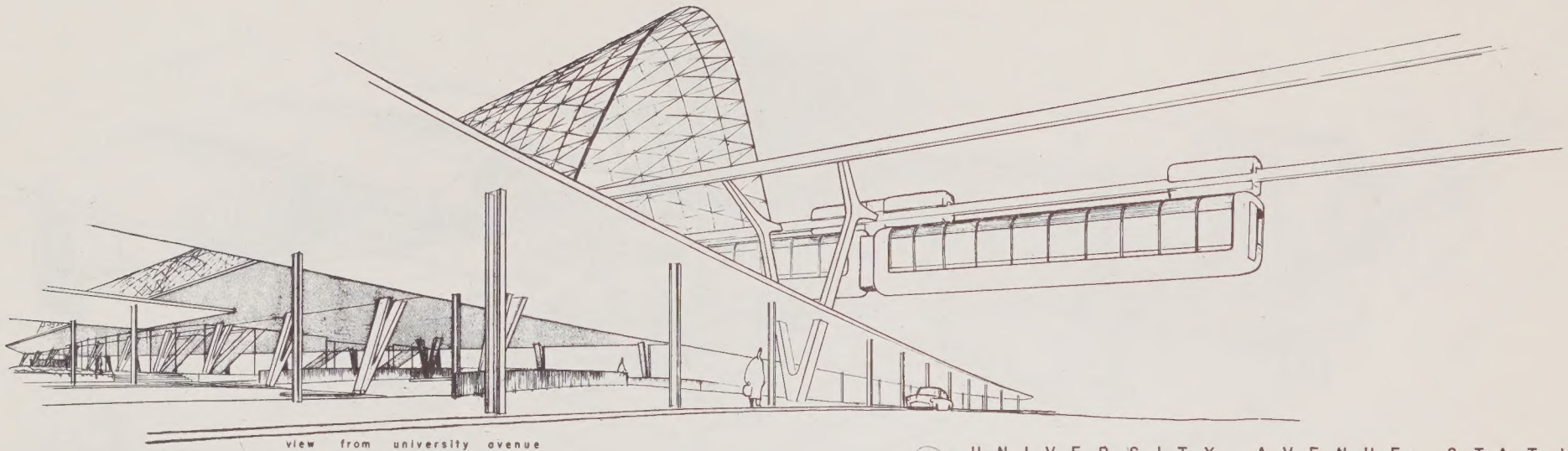


FROM WEST



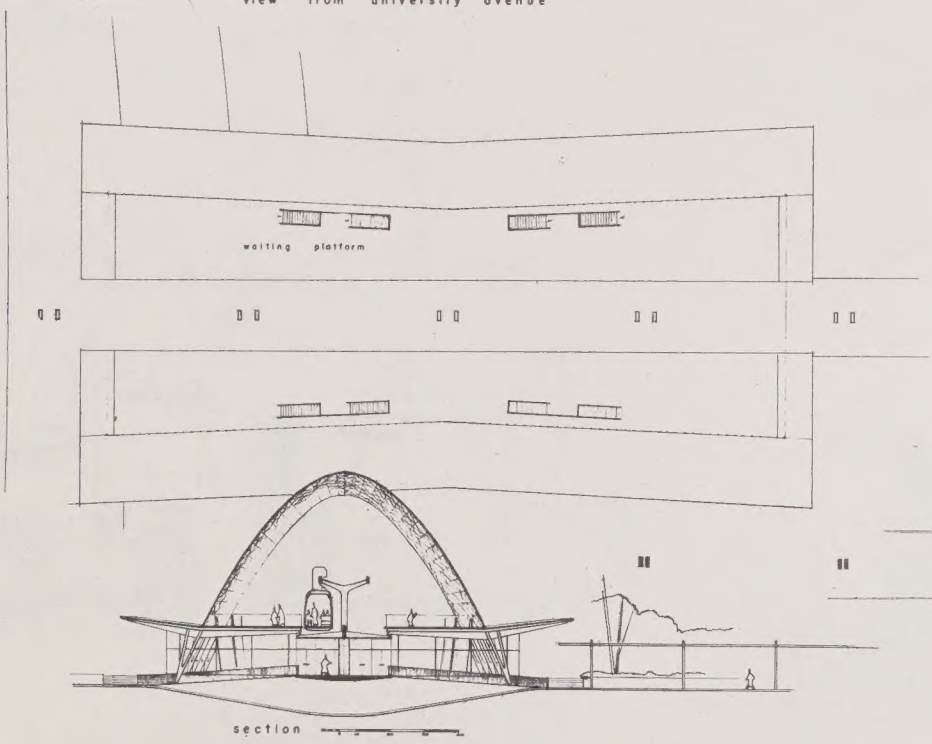

PLAN SCALE: $\frac{3}{64}$" = 1'-0"

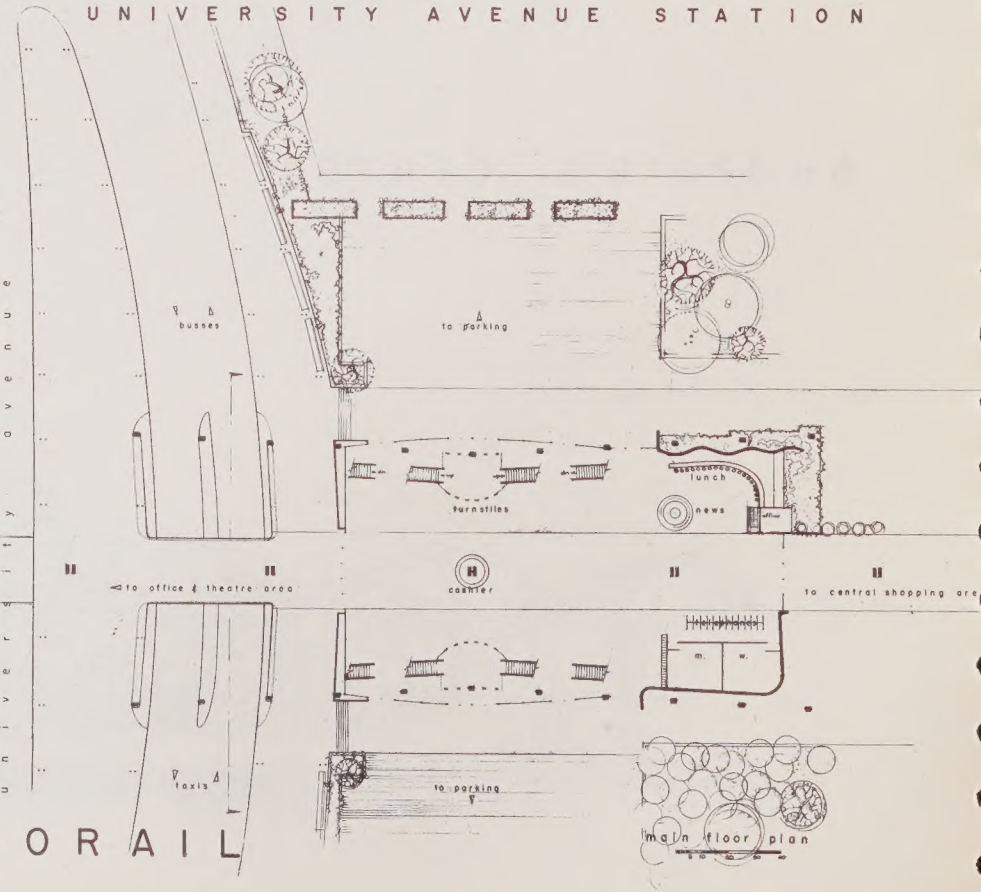
FLOOR AREA : 11,200 SQ.FT.
PARKING AREA : 31,680 SQ.FT.



view from university avenue

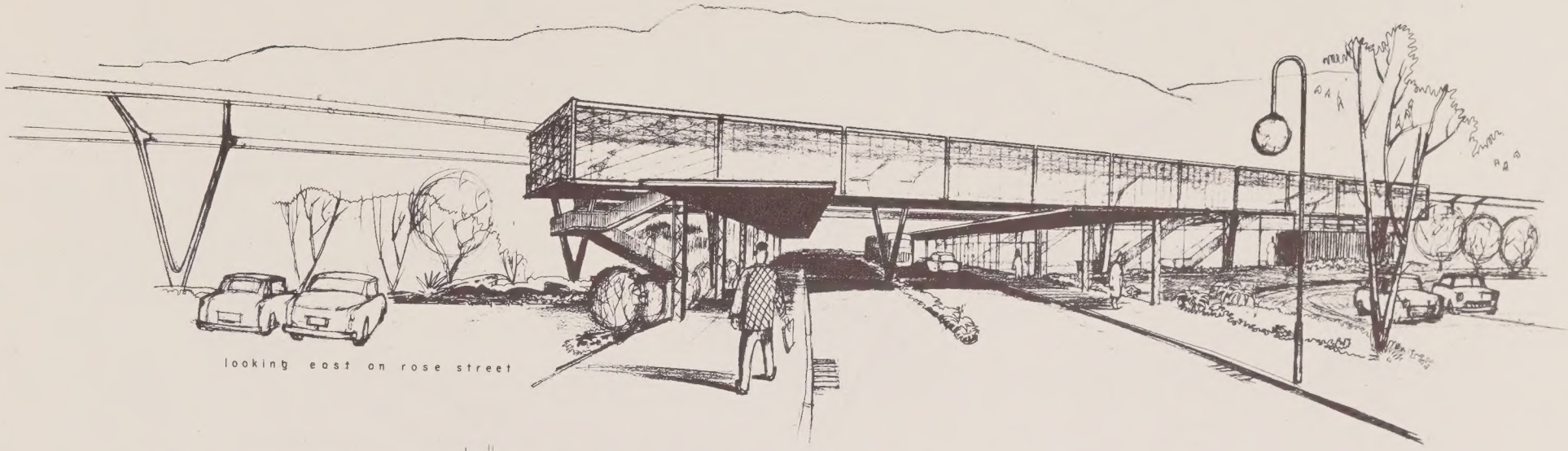
UNIVERSITY AVENUE STATION



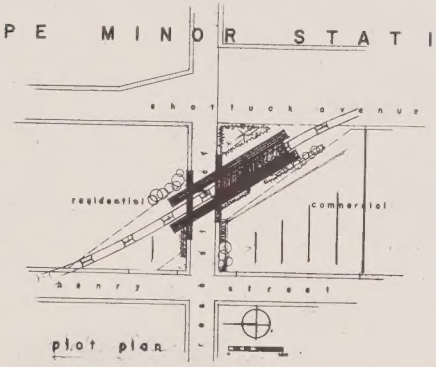

# RAPID TRANSIT · MONORAIL

21

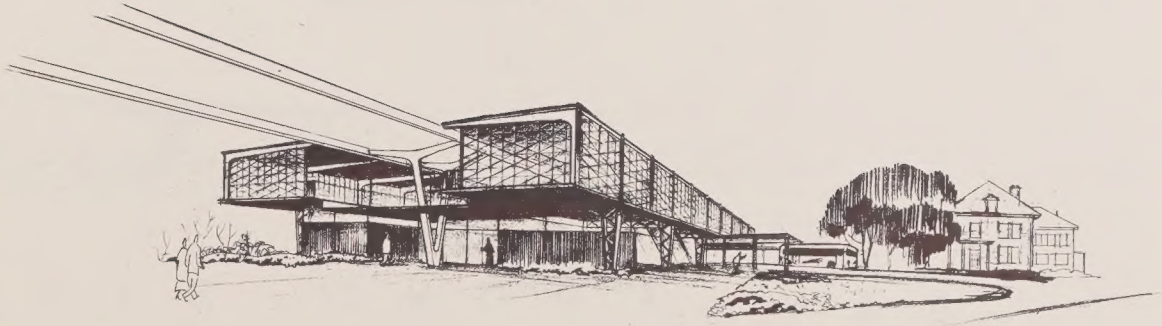


looking east on rose street

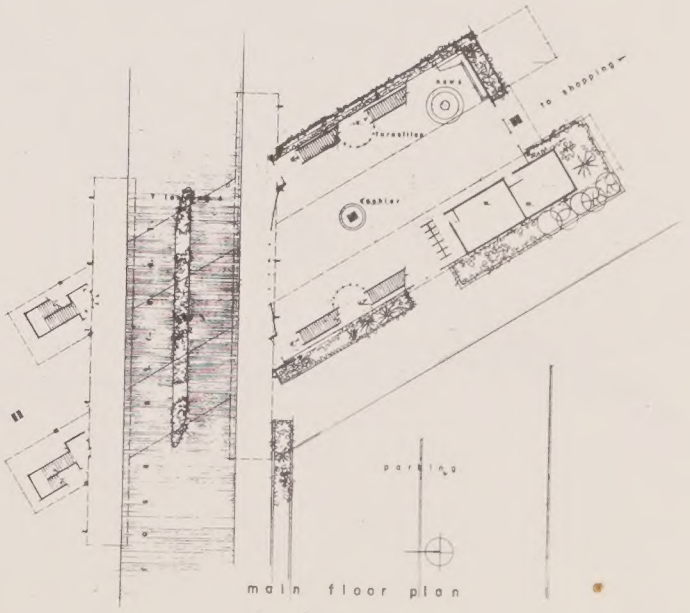
# PROTOTYPE MINOR STATION



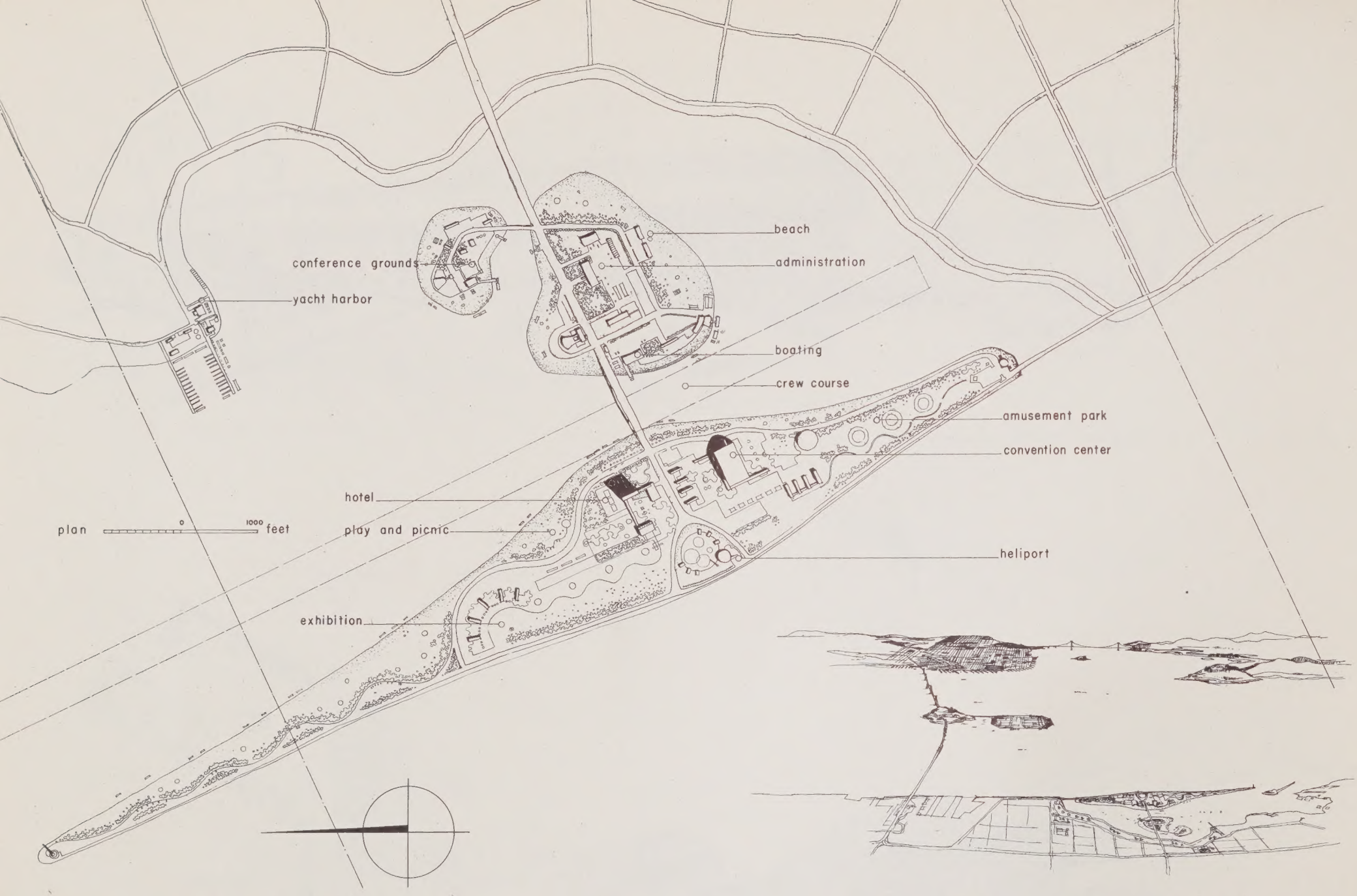

plot plan



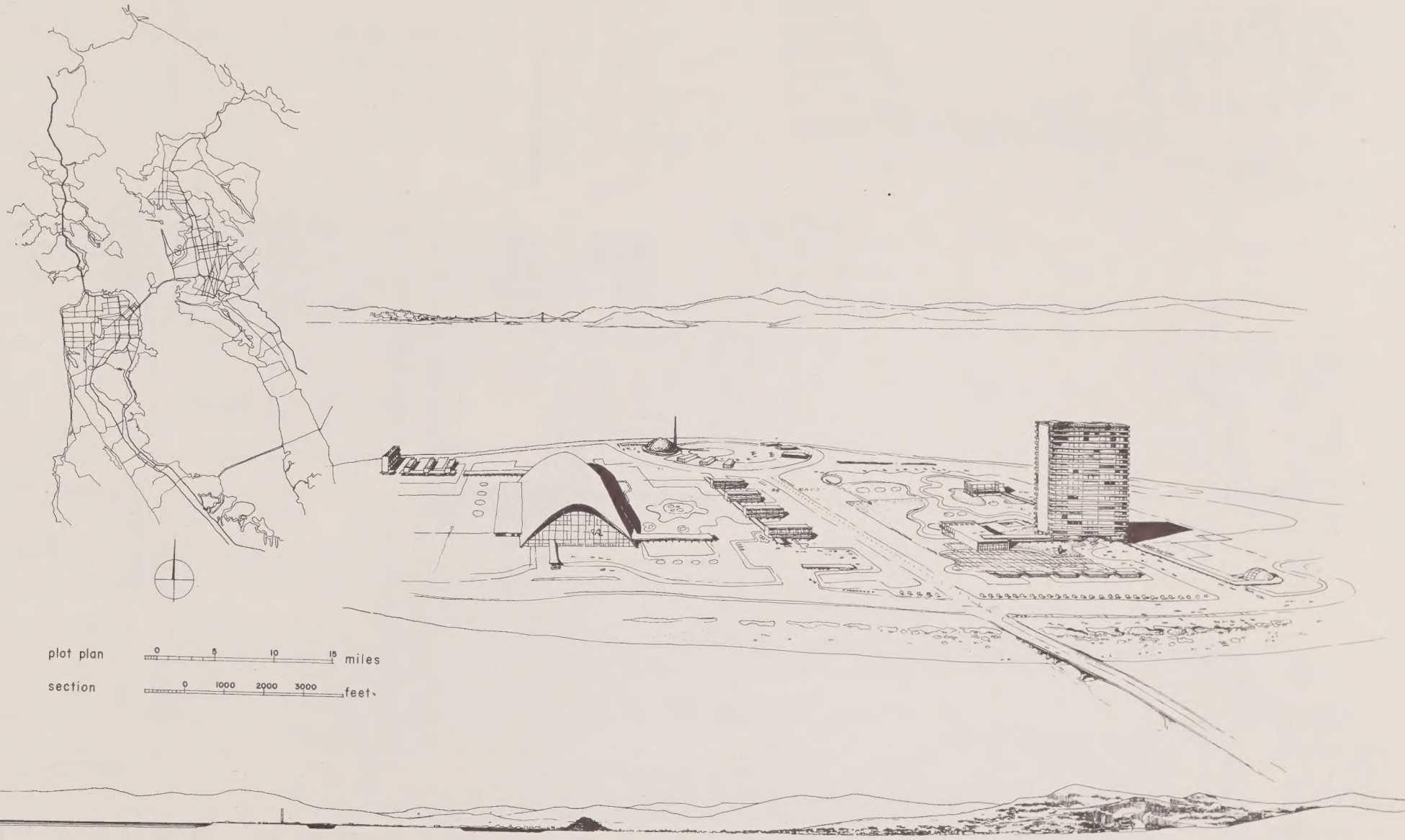
view from shattuck avenue

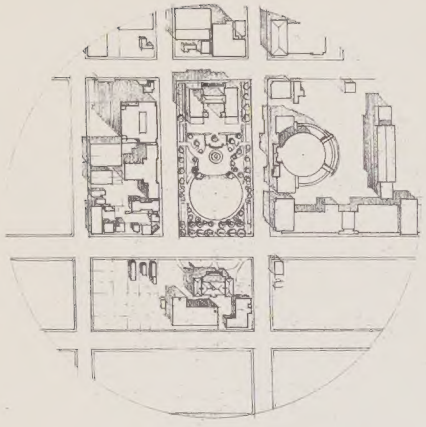



main floor plan

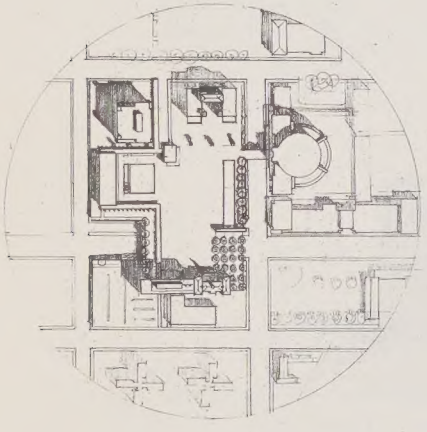



# BAY FRONT STUDY

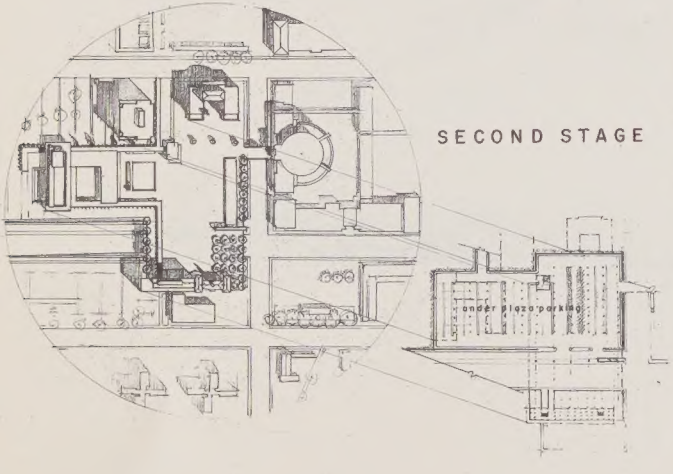

plot plan
0 5 10 15 miles
section
0 1000 2000 3000 feet



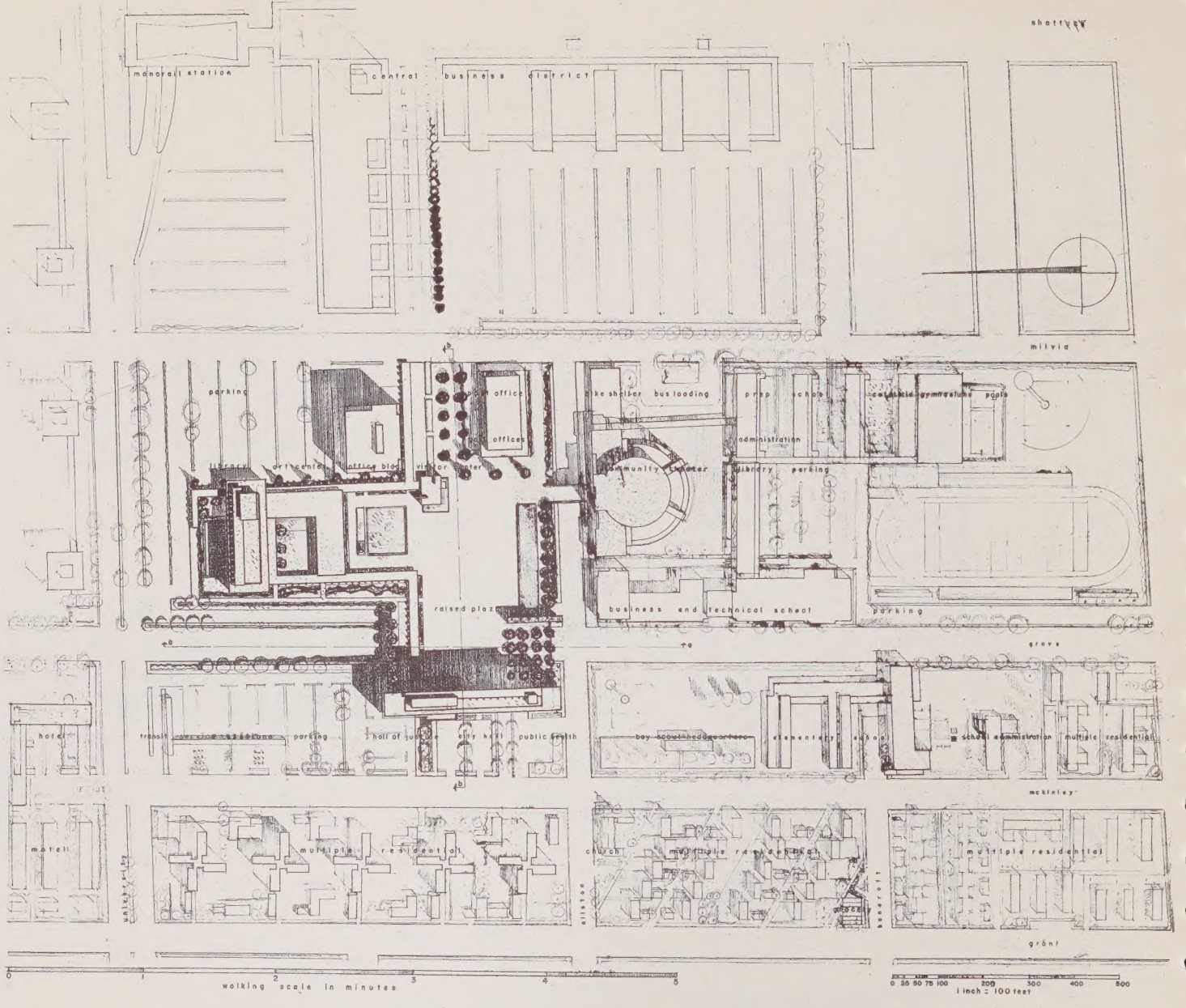
PRESENT



FIRST STAGE




SECOND STAGE

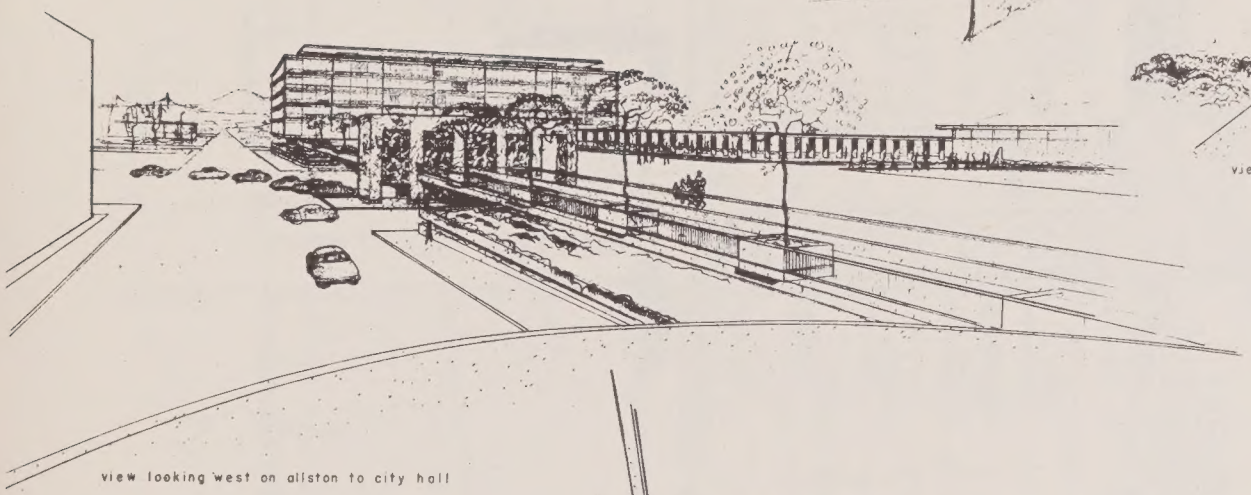



# CIVIC CENTER AREA OBJECTIVE

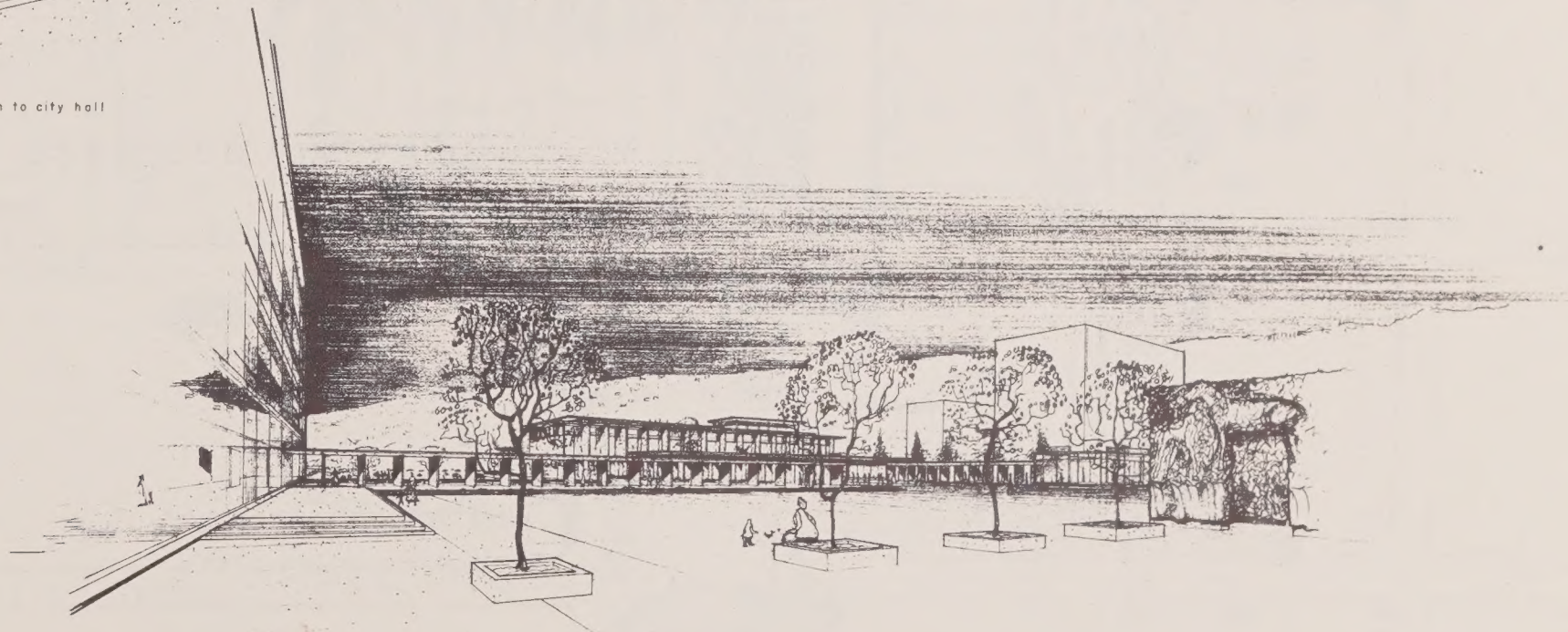
25

ARCHITECTURAL DEVELOPMENTAL STUDIES
AN INTERIM GENERAL PLAN FOR BERKELEY GRADUATE STUDENT PROJECT UNIVERSITY OF CALIFORNIA 1952

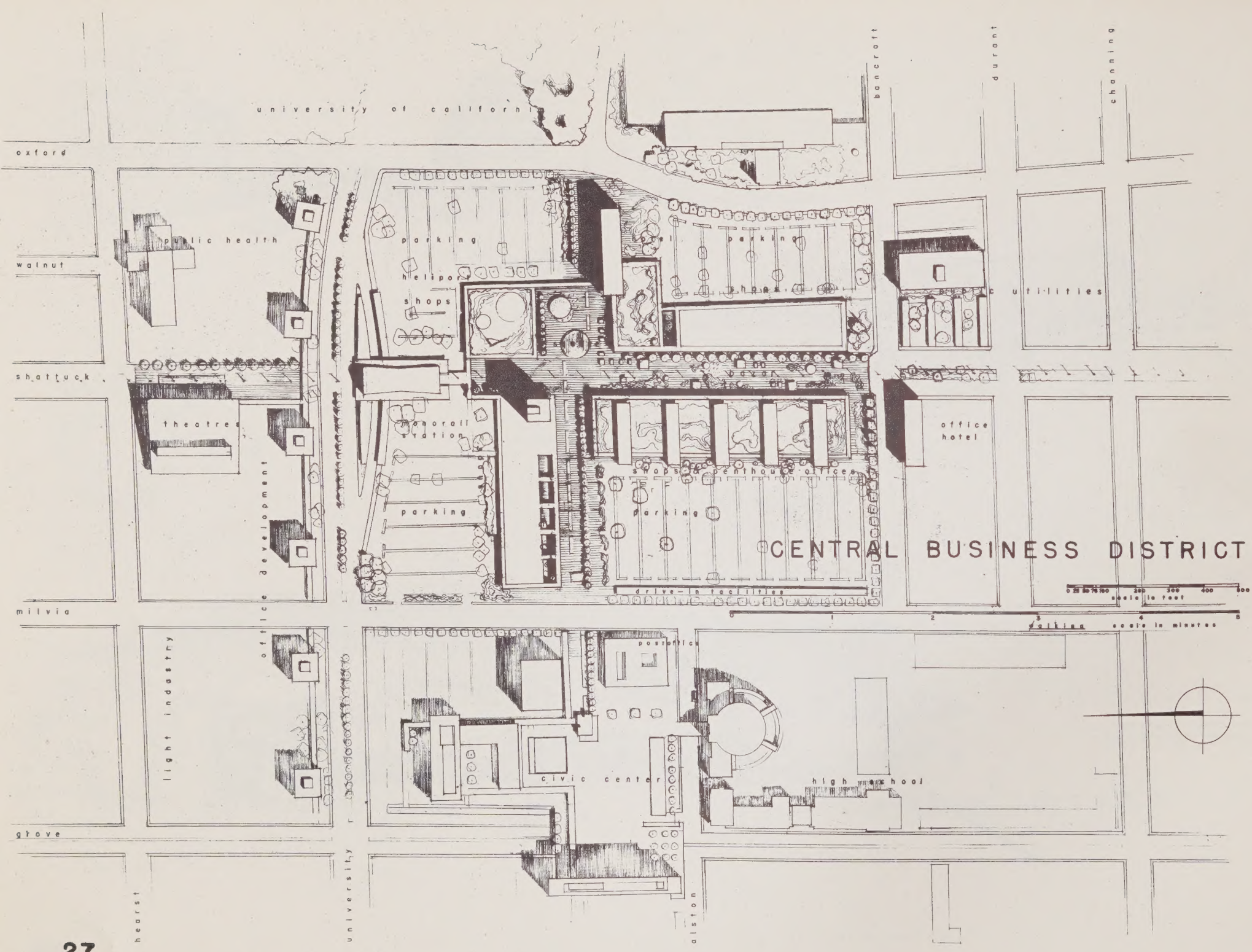
view looking north on grove



view looking west on alston to city hall



view looking north across plaza to library



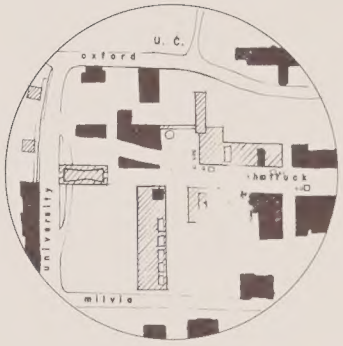

27

A R C H I T E C T U R A L  D E V E L O P M E N T A L  S T U D I E S

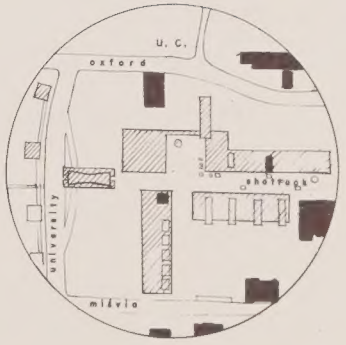
AN INTERIM GENERAL PLAN FOR BERKELEY  GRADUATE STUDENT PROJECT  UNIVERSITY OF CALIFORNIA  1952

present plan

stage 1




stage 2




stage 3

existing buildings

suggested buildings

STUDY SHOWING STAGES OF DEVELOPMENT
OF SUGGESTED PLAN

# APPENDICES

# INDEX TO APPENDICES


| Appendix | | Page |
|---|---|---|
| A. | The Initial Assignments to the Student Group | 197 |
| | Statement by Professor T. J. Kent, Jr. | 197 |
| | Statement by Professor George Downs | 199 |
| B. | The Operational Procedures of the Student Group | 200 |
| | Staff Organization for Phase I--Frame and Reference | 202 |
| | Staff Organization for Phase II--Survey and Analysis | 202 |
| | Staff Organization for Phase III--Synthesis and Design | 203 |
| | Staff Organization for Phase IV--Production | 203 |
| C. | Statement of Relationship between the Student City Planning Commission and the Student Architectural Consultant Firm | 205 |
| | Purpose | 205 |
| | The Interim General Plan | 205 |
| | The Requisite Skills | 205 |
| | The Reasons for Contracting a Firm of Architects | 206 |
| | The Role of the Architectural Consultants | 207 |
| | Summary | 207 |
| D. | Tables | 209 |
| | 2. Acreage of Existing Land Uses, Existing Zones, and Proposed Land Uses, and Each as Percentages of Total City Acreage, Berkeley, 1951 | 212 |
| | 3. Acreage of Major Land Use Types, by Census Tract, Berkeley, 1951 | 213 |
| | 4. Acreage of Major Land Use Types, by Census Tract, as Per Cent of Total Acreage of Tract, Berkeley, 1951 | 214 |
| | 5. Acreage in Residential Development, by Type of Development, for Census Tracts, Berkeley, 1951 | 215 |

INDEX TO APPENDICES, CONTINUED

Appendix — Page

D. Tables (Cont'd)

6. Parcels in Residential Development, by Type of Development, for Census Tracts, Berkeley, 1951..... 216

7. Existing Densities, Allowable Densities under Berkeley Zoning Ordinance, and Proposed Densities, Berkeley, 1951..... 217

8. Population, Residential Acreage, and Net Residential Density, by Census Tract and Enumeration District, Berkeley, 1950-1951..... 218

9. Number of Persons per Household, by Size of Household, Berkeley, 1940..... 221

10. Age Compositions of Berkeley, Oakland, and the Nine Bay Area Counties, as Percentages of Total Population of Each, 1940..... 221

11. Population Trends and Forecasts, Selected Areas, 1860-1970..... 222

12. Population, Economic Activity, and Land Area for Economic Areas of Northern California, 1860-1950, as Compared to 1950 Population Distribution..... 223

13. Number of Manufacturing Establishments, Value Added by Manufacture, and Number of Production Workers, by County, Bay Region, 1939-1947..... 224

14. Number of Manufacturing Establishments, Value Added by Manufacture, and Number of Production Workers, by City, Alameda County, 1939-1947..... 225

15. Number of Retail Establishments, Volume of Retail Sales, and Number of Retail Employees, by County, Bay Region, 1939-1948..... 226

16. Number of Retail Establishments, Volume of Retail Sales, and Number of Retail Employees, by City, Alameda County, 1939-1948..... 227

17. Number of Outlets and Volume of Receipts, Selected Service Trades, by County, Bay Region, 1939-1948..... 228

INDEX TO APPENDICES, CONTINUED


Appendix — Page

D. Tables (Cont'd)

18. Number of Wholesale Outlets and Volume of Wholesale Sales, by County, Bay Region, 1939-1948 ..... 229

19. Number of Employees, by Type of Economic Activity, Albany and Berkeley, 1951 ..... 230

20. Projections of the Number of Production Workers and of Estimated Industrial Land Requirements, for the Nine Bay Area Counties, 1919-1970 ..... 231

21. Enrollment in Principal Educational Institutions in Berkeley and Numbers of Students Commuting From Outside Berkeley, 1951 ..... 232

22. Origins of Commuting Students at the University of California, 1947-48 .... 232

23. Acreage in Parks, Supervised Playgrounds, and School Playgrounds, Berkeley, 1951 ..... 233

E. Sources ..... 234

Interviewees ..... 234
Publications ..... 235
Unpublished Materials ..... 238

APPENDIX A

THE INITIAL ASSIGNMENTS TO THE STUDENT GROUP

| | | |
|---|---|---|
| U N I V E R S I T Y of C A L I F O R N I A | : | C.P. 213; Fall, 1951 |
| Department of City and Regional Planning | : | Problem II File 011.222 |
| September 24, 1951 | : | 12 to 15 weeks |

Subject: City Planning Graduate Student Problem - Preparation of Preliminary Master Plan (Interim General Plan) for Berkeley

To : Members of City Planning 213 Class

From : Professor Kent

Introduction

The Berkeley City Council provided funds in 1949 for the creation of a permanent professional staff for the City Planning Commission. During the past two years the Director of Planning and his staff have undertaken numerous assignments made by the Commission, the City Manager, and the City Council. A large amount of basic information has been assembled, the role of the planning agency in the city government has been greatly strengthened, and knowledge of the physical development problems which are of particular significance to the people of Berkeley has been gained. In addition, real progress has been made in clarifying just what the master plan, which state and local laws require be prepared and used as a guide in the future development of the city, should consist of.

It will be assumed for the purposes of this student study that a problem of city-wide importance--the need for the reduction of the R3 zone--has reached the point where a recommendation from the Planning Commission will be required in the near future. It will also be assumed that the commission, together with several other important groups in the community, is no longer willing, as it had to be in the past when it had no staff, to make recommendations on a matter of such importance for the future of Berkeley without also presenting to the people of the community its ideas as to the nature of the future city it has in mind. Thus a preliminary master plan must be prepared in form suitable for consideration by groups and individual citizens. It must also be in a form suitable for later adoption by the City Planning Commission.

Statement of the Problem

Your group is to prepare the preliminary master plan referred to above, together with an accompanying report presenting the survey material, forecasts and assumptions, the preliminary master plan, and a description of the plan.

Collaboration with Graduate Architecture Students

The Department of City and Regional Planning and the School of Architecture have made arrangements that will enable a group of architecture students under the direction of Professor Downs to collaborate with us on this problem. Professor Downs and I believe that the most effective working relationships can be achieved if it is assumed that the Planning Commission, on the recommendation of its Director, has engaged an outstanding firm of architects to advise and assist the Director and staff in the preparation of the preliminary master plan. Although this may seem to be an unusual assumption, I believe that such a role must be developed for the architect, landscape architect, and engineer before these professions will be able to make the vitally necessary contributions which only they can make to the future improvement of the city as expressed in the official master plan. The exact nature of the work to be undertaken by the architects must be defined as a result of equal collaboration. It must be clearly understood by both groups, however, that this collaborative problem does not provide an introduction to architecture for the city planners, nor an introduction to city planning for the architects. Just what the role of the architect will be is not easy to see; American society will certainly eventually demand that its urban environment be organized in a far more adequate manner--both functionally and aesthetically--in order to provide decently for the full needs of human beings. Art experience, in the long run, is an absolutely vital human activity; no society known to anthropologists has continued to exist without providing a very important role for the creative artist and without recognizing the daily need for art experience.

The fact that Berkeleyans are very much aware of the striking aesthetic qualities of the site of their city and that the Bay Area community has a relatively high regard for architecture and architects makes it appropriate for us to give special attention, in terms of contemporary planning practice, to the design aspects of the master plan.

Procedure

The city planning group co-chairmen will be Mel Webber and Albert Wagner. Unlike most of your previous group work in the city planning problems course, your instructor will be ready to undertake a much more active role in the administration and decision-making processes in this problem. Our experience with the Danville New City problem of last year has convinced me that this is the only practicable way to work with such a large group, and that the kind of experience that this will give you is most important. As in the Danville problem, it is expected that the instructor's role will be one of approving recommendations, and not making them.

Attached to this statement is a copy of the instruction statement which Professor Downs has given to the architecture students.

Your first task is to discuss the nature of the problem as you understand it and to prepare a restatement of it in your own terms. This revision should be far more detailed than the one presented in this memo, and it should be in suitable form for inclusion in the final report. Due dates, assignments, and all other such matters will be determined as the work proceeds. It is understood that this is a major effort and that the time allotted, 12 to 15 weeks, should make it possible for each member of the group to contribute an important, original piece of work.

Subject: Architecture 201B Problem Statement

Presented by: Professor Downs

Date: Fall Semester 1951

Problem Statement

The work for this graduate semester will endeavor to expand the meaning of architecture to its limit where it should coordinate with city and metropolitan regional planning. We will work the entire time with students and faculty of the Department of City and Regional Planning, this class studying architecture, they, city planning, but together learning how to coordinate with mutual benefit. We will determine, if possible, the zone within which each profession can find profitable definition.

For you, this is an exercise in finding architectural challenges, in organizing your own efforts, and in programming and then arriving at creative and scientific solutions for your stated problems.

The group will be divided to work as teammates with graduate students in city planning, and together will be expected to accomplish the following:

1. Cooperate in the initiation of a survey of the City of Berkeley.

2. Cooperate in the derivation of general conclusions relative to improvement and future growth of the city.

3. Program specific developmental studies to illustrate possible development of portions of the city, in accordance with the plan.

4. Derive specific solutions to these developmental studies.

# APPENDIX B

## OPERATIONAL PROCEDURES OF THE STUDENT GROUP

The charts on the following two pages are intended to give the interested reader an indication of the ways in which the graduate student group as a whole, including students in both architecture and in city planning, organized itself in the several stages of work during the course of the semester. It was imperative that formal administrative organization be established in order that the efforts of each student might most easily be coordinated with those of the remainder of the eighteen-person group.

Professors George Downs and T. J. Kent, Jr., of the School of Architecture and the Department of City and Regional Planning, respectively, furnished the guidance which was necessary for the conduct of the study. Professor Downs was the instructor for Section I of the course, Architecture 201B; Professor Kent was the instructor for the course, City Planning 213. Jointly they served as Faculty Coordinators in all phases of the work.

Each professor designated two students from their respective classes to serve as co-chairmen; the four students together chose one student from each class to serve as Director of Planning and as Chief Architectural Consultant. They were to serve in these administrative capacities throughout the semester.

The various aspects of the work were in turn distributed among the student group in accordance with the skills and interests of the separate persons. An attempt was made to specialize the study assignments in order to make possible an intensity of research and a degree of follow-through by specific persons which would allow those persons to become as familiar as possible with specific aspects of the work. At the same time, and whenever possible, it was desired that each person should work on a number of different aspects of the study, in order that the learning process might thereby be furthered. In a like manner, the administrative positions were rotated, in order that each student might gain experience in the supervision of group work. The realization of these objectives was not always feasible; and although all students did assume responsibilities for administrative direction, it was necessary to rely upon frequent staff conferences for the familiarization of all members of the group with the specific studies being conducted by the various sub-groups.

It was a basic hypothesis of the study that the preparation of a comprehensive plan required the skills of persons, trained in an allied art to city planning, whose aesthetic perception and guidance might supplement the technical skills of the city planner in order to make possible the better utilization of the city's site for maximum functional and aesthetic improvement.

The city planning students organized themselves within the framework of a typical city planning agency in local government. In order to conform

as closely as possible to the real situation, the architecture students organized themselves as a firm of architectural consultants to the city planning department. As a means of clarifying the relationship between the two groups, an agreement was drawn which outlined the areas of responsibility and the work to be performed by the architectural consultant firm. The agreement follows as Appendix C.

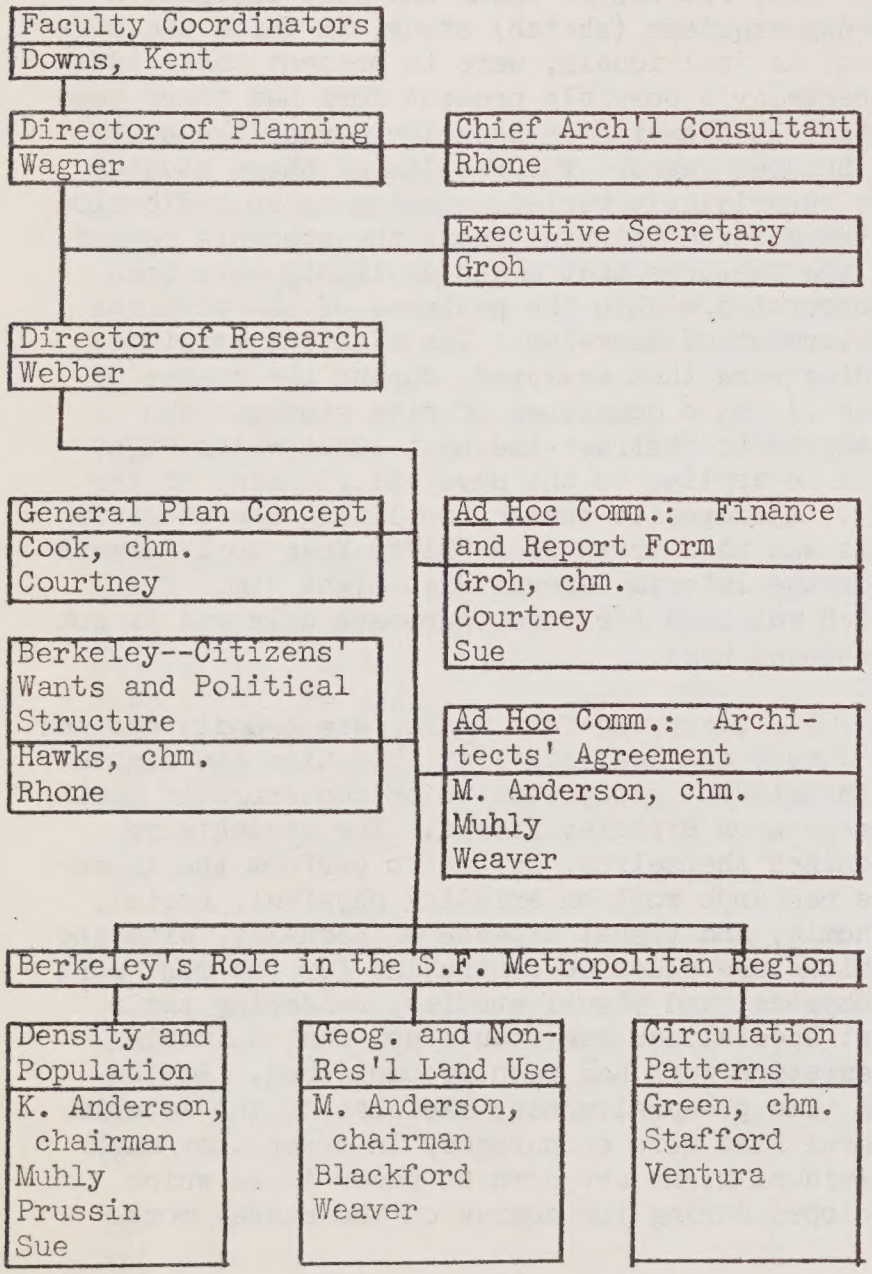
Four main phases of work constituted the main operational divisions through which the study was conducted. In Phase I, "Frame of Reference," the students were to establish a physical and conceptual context into which Berkeley's present and future role in the Bay Area and into which the planning program might be fitted. Here the group was divided into several teams, each exploring specific topics, as indicated in the chart showing the Phase I Table of Organization. In addition, there were two ad hoc committees, whose part-time tasks were (1) to draw up a suitable agreement for the "employment" of the architectural consultant firm by the "city planning department" and (2) to arrive at conclusions with respect to the means of financing the group effort and with respect to the general form which the final report and graphic display would assume.

Phase I occupied four weeks of the semester. At the end of this period five preliminary reports were submitted, one by each working team, covering the material which each team had investigated. These reports served as highly valuable orientation material during the remainder of the semester, and in addition they aided the students in each class to understand the working methods of the other.

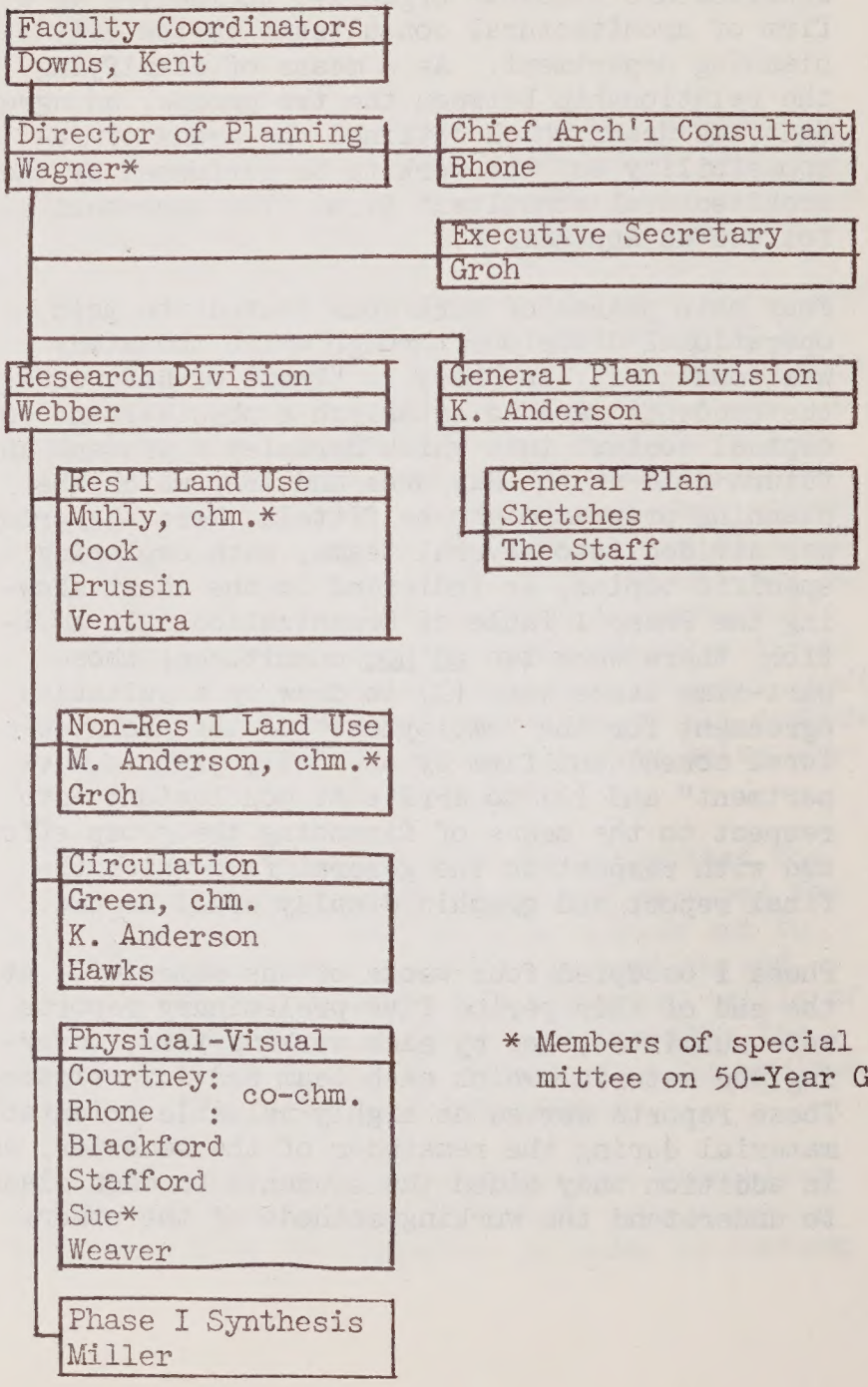
Immediately following the completion of the Phase I studies, Professors Downs and Kent assigned a two-day esquisse (sketch) study, in which the students, as individuals, were to present their ideas of Berkeley's possible present form had there been continuous planning in Berkeley during the past one hundred years. The results of these studies were surprisingly varied, serving as an indication of the diverse thinking among the students regarding the features that might desirably have been incorporated within the patterns of the physical development of Berkeley. The eighteen esquisse studies were then analyzed, during the course of Phase II, by a committee of five students who attempted to abstract the best ideas which might still be applied to the physical planning of the city. A composite sketch, outlining the students' ideas was then drawn as a "Fifty-Year Goal" toward which the Interim General Plan might aim. The sketch was used for study purposes only and is not reproduced here.

Phase II, occupying four weeks, was broadly defined as "Survey and Analysis"; at this time the sights of the student group were to be concentrated more closely upon Berkeley itself. The students reorganized themselves, better to perform the intensive research work on existing physical, social, economic, and visual aspects of Berkeley, with the architecture class concentrating for the most part on physical and visual studies, rendering their first specialized assistance now that suitable orientation work had been accomplished. At the same time pre-preliminary sketches of the Interim General Plan were encouraged, in order that each individual might set down on paper ideas which developed during the course of the survey work.

STAFF ORGANIZATION FOR PHASE I--FRAME OF REFERENCE

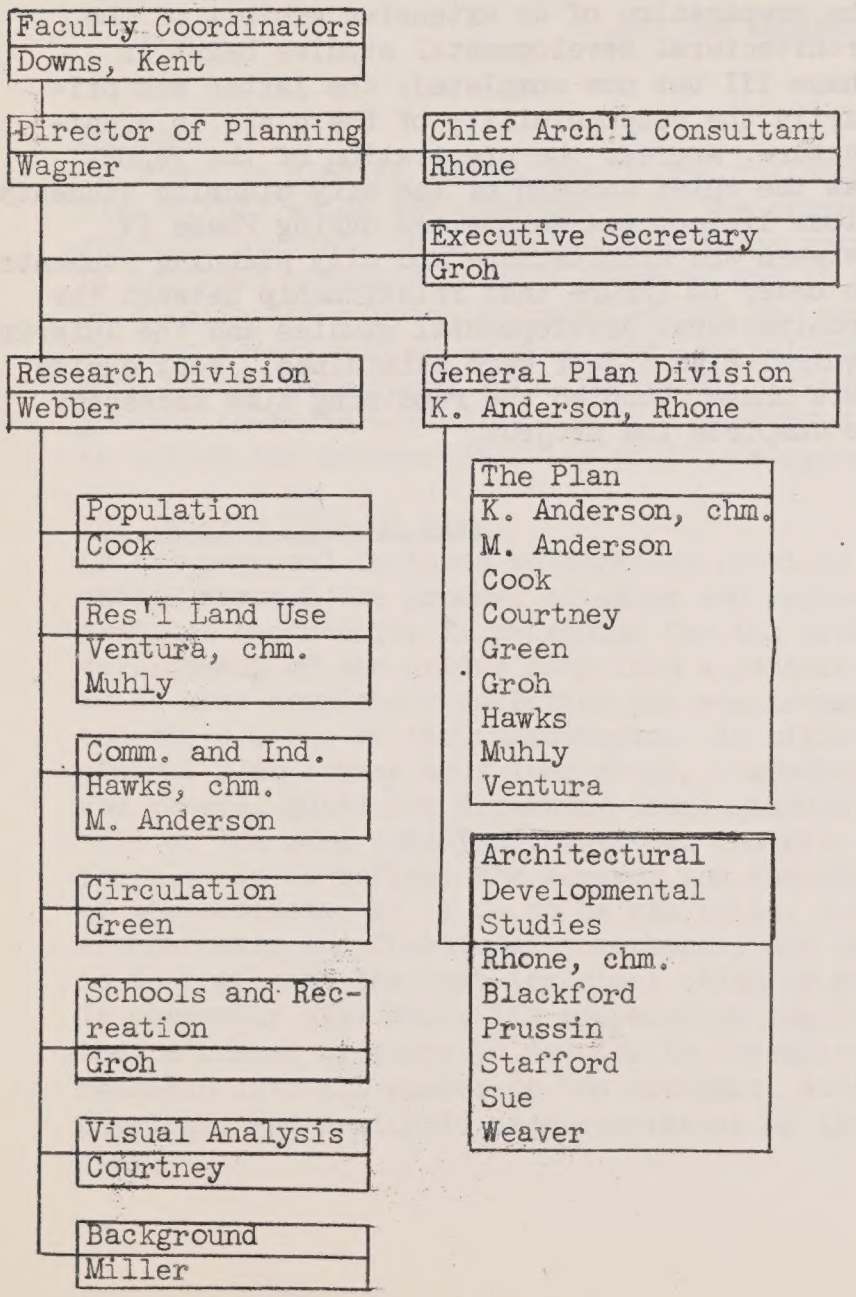



STAFF ORGANIZATION FOR PHASE II--SURVEY AND ANALYSIS

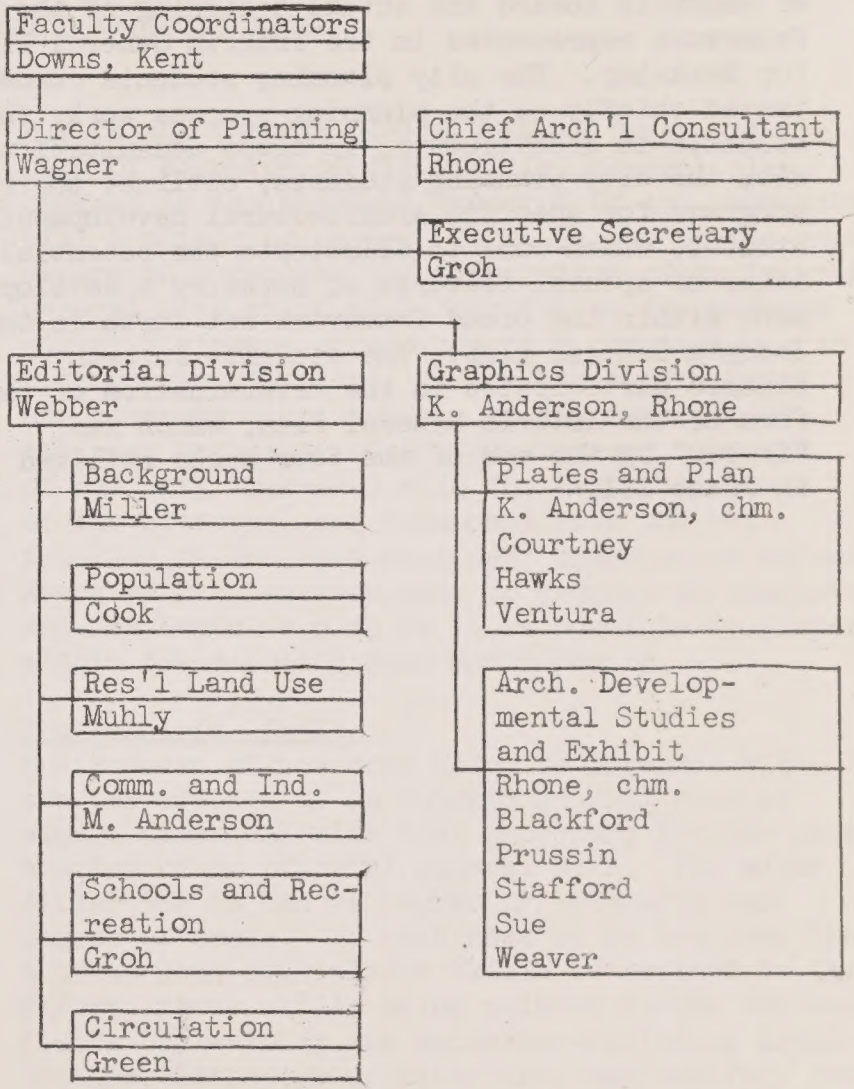



* Members of special committee on 50-Year Goals

STAFF ORGANIZATION FOR PHASE III--SYNTHESIS AND DESIGN




STAFF ORGANIZATION FOR PHASE IV--PRODUCTION



Phase III saw, in general, the continuation and completion of survey work undertaken in Phase II, the synthesis of Phase II efforts, and a shifting of emphasis toward the actual designing of the framework represented in the Interim General Plan for Berkeley. The city planning students concentrated chiefly on the planning process work; the students in architecture, in close consultation with the city planning students, outlined their programs for specific architectural developmental studies, which were to illustrate the potentialities of special features of Berkeley's development within the broad framework set forth in the Interim General Plan. The students in both classes participated in the determination of the form of the Interim General Plan, which was "frozen" by the end of the four weeks utilized in Phase III.

Phase IV was devoted to the assembly and production of all textual and graphic material included in the Interim General Plan report, as well as to the preparation of an extensive exhibit of the architectural developmental studies begun in Phase III but now completed; the latter was primarily the responsibility of the class in architecture, whereas the preparation of the report was the chief concern of the city planning students. Close liaison was maintained during Phase IV between the architecture and city planning students, in order to insure that relationship between the architectural developmental studies and the Interim General Plan itself were maintained. Work during this phase occupied the remaining time necessary to complete the project.

## APPENDIX C

## STATEMENT OF RELATIONSHIP BETWEEN THE STUDENT CITY PLANNING COMMISSION AND THE STUDENT ARCHITECTURAL CONSULTANT FIRM

Purpose

In order to clarify the nature of the collaborative effort which was undertaken by the group of graduate students in architecture and the group of graduate students in city planning and in order to clarify the respective roles of the two groups and the relationships between them, an attempt is made in the paragraphs which follow to define the general characteristics of the task performed and to define the responsibilities of the two groups.

The Interim General Plan

As the physical features of Berkeley continue to change through the process of aging and replacement, an opportunity is presented for the gradual development of the entire city into a pattern which more completely satisfies the requirements and the desires of its inhabitants. An official general plan serves as a long-range, comprehensive, and general guide for directing these gradual, as well as the more immediate, physical changes. If the plan is to reflect the desires and the needs of the citizens, if it is to be realistic, i.e., economically and functionally workable, and if it is to represent the best technical thinking which is currently available, its preparation requires that a number of years be devoted to intensive research into all phases of the economic, social, physical, and aesthetic characteristics of the city.

But in the interim period between today and the date of adoption of the official general plan changes in the physical patterns of the community will continue to occur. Thus, it has become necessary to undertake the preparation of an interim general plan which will function as the interim policy statement of the planning commission. It attempts to represent, on the basis of a brief but comprehensive analysis of the entire city, the best organization of the physical elements of the city consonant with the wants and needs of its citizens, and consonant with the best thinking of the many pertinent branches of science. Every effort has been made to prepare as complete and meaningful a plan as it is possible to prepare within the allotted four-month period.

The Requisite Skills

The process of research which is integral with the preparation of an interim general plan is almost identical with that necessary for the preparation of an official general plan. The major difference is one of degree of intensity and degree of scope. In each case it is required that a great many specialized skills be applied to the effort, those skills being related to the various fields of learning and endeavor--including architecture, landscape architecture, engineering, law, economics, business administration, social psychology, anthropology, sociology, geography,

political science, and many other design, social science, and physical science fields. Many of the skills are held by the personnel of the planning department or of other departments within the governmental structure of the city. Some of the specialized skills are not held by city employees and, where possible, it is desirable that specialists be called in as consultants. The final cadre of persons who assist in the plan's preparation must then operate as a team, in order that each skill may be employed for the realization of its maximum advantage and in order that the final results of the joint effort shall reflect the best thinking which the group endeavor can produce.

The Reasons for Contracting a Firm of Architects

The major problem demanding solution at the present time in Berkeley is that concerned with the control of residential densities. The present population of Berkeley is approximately 114,000. The general feeling of the community, insofar as it has been determined, as well as the most informed thinking of city planners and social scientists, suggests that Berkeley ought to retain its general, low-density residential character. However, the present zoning ordinance would allow the population to increase to approximately 900,000. Thus it has become necessary to prepare a guide for the revisions of the zoning ordinance which will reflect a lower population holding capacity for Berkeley.

In order to attain this objective, it has been important to recognize that the distribution of planned densities is reciprocally related to commercial, industrial, recreational, educational, institutional, governmental, and circulatory activities.

One of the major and basic characteristics common to all these activities is the provision of shelter and of open spaces in such manner that each structure has a sufficient amount of light and air and is functionally and aesthetically related to the open spaces adjoining it, to its neighboring structures, and to the larger man-made and natural landscapes.

The potentialities for living which are afforded by Berkeley's natural site are indeed tremendous and are in several respects unique. The Bayshore setting of the city and the beauty of the Oakland-Berkeley Hills are natural attributes which merit special attention, beyond that which a staff of professional city planners normally can give. A study devoted to these aspects of the city should attempt to analyze the specific aesthetic characteristics of the site and of the development which has taken place upon that site. It should further attempt to determine better ways of developing both the man-made and the natural elements in the future, so as to enhance the aesthetic and functional characteristics of the city.

Since the satisfactory completion of the study, which was conducted as a part of the present project, required skills which were not held by members of the city planning staff, it was necessary to draw upon the advice and judgment of a firm of architects which is expert in the standards, procedures, and principles pertinent to the provision of shelter and to the undertaking of comprehensive analyses of the functional-visual

elements. Such a study is deemed to be clearly within the province of the architect; for architecture may be defined as that field of human activity which is primarily concerned with the provision of functional, material, and aesthetically desirable shelter and open space for all forms of changing human needs.

The Role of the Architectural Consultants

Responsibility for all phases of plan preparation rested with the city planning staff. The firm of architects acted as consultants on matters pertaining to general considerations of shelter and of aesthetic and functional organization of the physical elements of the city.

In view of the fact that these specialized considerations are intimately related to all land use and circulation factors, it was deemed to be advisable that the architectural personnel participate in all phases of the planning process--including the gathering and analysis of data in the preliminary work devoted to the establishment of a frame of reference, the detailed survey work devoted to a comprehensive analysis of Berkeley, and the design work associated with the actual preparation of the general plan. It was believed that as a result of this close collaboration the architects would be better able to assist in the shaping of the research studies, so as to assure that the necessary information was accumulated, and to assist in the interpretation of the data, so as to assure that the fullest understanding of the aesthetic and functional implications of the data would be realized. In addition, it was believed that the close collaboration would assist the architects in the conduct of those phases of the project which were their specialized responsibility, since they would thereby have gained a broader understanding of the physical organization of the city and of the life of its citizens.

Supplementary to the general contribution which the architects made in the work outlined above, they undertook specific studies of developmental possibilities which might occur within the framework established by the interim general plan. These studies not only serve to suggest ways in which specialized areas of the city might develop in the future, but they were of greatest value in helping to shape the plan itself. By testing various proposals for the plan in three-dimensional sketch form during the period of preliminary study of the plan, it was possible better to estimate the feasibilities of these proposals. Following the acceptance of any specific proposal and its inclusion in the plan, the architects then prepared more detailed studies of that proposal for presentation to the Commission and to the public, as their personal impressions of ways in which the city might develop within the skeleton framework outlined by the plan.

Summary

The general tasks and the areas of responsibility of the architectural firm were as follows:

1. Preliminary and coordinated orientation work.

2. Participation in various survey activities, including studies of economic, social, and physical factors within the city.

3. Primary responsibility for the conduct of a detailed physical-visual analysis of the

natural and man-made factors which characterize the city.

4. Participation in the organization and evaluation of information collected during the survey phases.

5. Participation in the preparation and design of the interim general plan.

6. Coordinated with the preparation of the plan, the preparation of specific site studies designed to test specific proposals of the plan.

7. Preparation of specific developmental studies, designed to illustrate possible types of development within the framework established by the plan.

8. Participation in the design and organization of the final plan drawing, and of such accompanying graphic materials as were deemed to be necessary.

9. In general, the success of this venture required close collaboration by all participating persons. To achieve this collaboration, it was necessary that the architectural personnel be amalgamated with the planning personnel into a single staff and under a single administrative director.

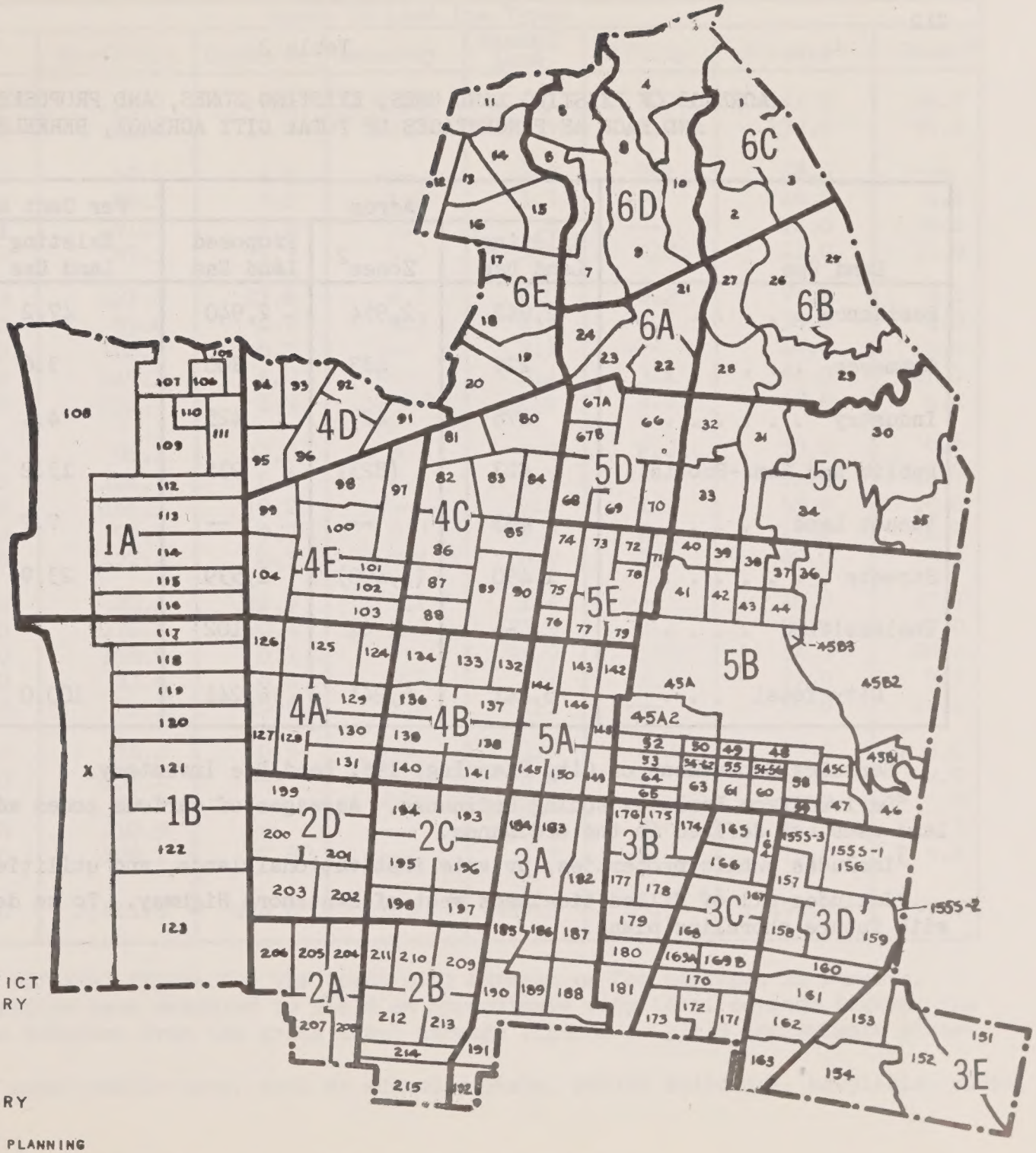
Within the unified administrative organization, however, certain functions of the architectural personnel were directed by the Chief Architectural Consultant.

In view of the facts that (1) the commissioning and collaboration of a firm of architects in the preparation of a city plan was still in the experimental stage in the experience of the city planning students, and (2) the individual architect's assignments and the specific developmental studies could not be defined at the outset, the initial statement of relationship between the two groups was necessarily general in character. Periodic consultations served to clarify the specific responsibilities and tasks which the firm of architects was required, by the very nature of the study, to assume. Their wholehearted participation in the project greatly simplified the administration of the collaborative effort; for they had agreed at the outset that their time and skills would be devoted to preparation of the interim general plan. And both time and skills were contributed as needed; the group identities largely disappeared, as individuals assumed those tasks which they were best capable of handling.

This statement therefore represents the results of early attempts at clarification of the role of the architects and the results of the actual experience of the two groups of students as they successfully pooled their efforts toward a common objective.

# APPENDIX D

## TABLES




# Key to ENUMERATION DISTRICTS and CENSUS TRACTS 1950

123 — ENUMERATION DISTRICT NUMBER AND BOUNDARY

4A — CENSUS TRACT NUMBER AND BOUNDARY

SOURCE: BERKELEY DEPARTMENT OF CITY PLANNING

Table 2

ACREAGE OF EXISTING LAND USES, EXISTING ZONES, AND PROPOSED LAND USES, AND EACH AS PERCENTAGES OF TOTAL CITY ACREAGE, BERKELEY, 1951

| Land Use | Acres | | | Per Cent of Total City Acreage | | |
|---|---|---|---|---|---|---|
| | Existing[1] Land Use | Zones[2] | Proposed Land Use | Existing[1] Land Use | Zones[2] | Proposed Land Use |
| Residence . . . . . | 2,942 | 2,954 | 2,940 | 47.2 | 47.3 | 47.2 |
| Commerce . . . . . | 225 | 483 | 300 | 3.6 | 7.7 | 4.8 |
| Industry . . . . . | 276 | 427 | 425 | 4.4 | 6.9 | 6.9 |
| Public and Semi-Public[3] | 823 | (823) | 935 | 13.2 | (13.2) | 14.9 |
| Vacant Land . . . . . | 483 | -- | -- | 7.7 | -- | -- |
| Streets . . . . . | 1,490 | (1,490) | 1,539 | 23.9 | (23.9) | 24.6 |
| Unclassified . . . . | -- | 64 | 102[4] | -- | 1.0 | 1.6[4] |
| City Total . . . | 6,241 | 6,241 | 6,241 | 100.0 | 100.0 | 100.0 |

[1]Berkeley Department of City Planning, 1951 Land Use Inventory.

[2]Derived from Berkeley Zoning Ordinance. Acreages of various zones adjusted for allowable land uses not defined in the ordinance.

[3]Includes public properties, private institutional lands, and utilities.

[4]Includes all of filled tidelands west of Eastshore Highway. To be developed in accordance with future shoreline plans.

Table 3

ACREAGE OF MAJOR LAND USE TYPES BY CENSUS TRACT, BERKELEY, 1951

| Census Tract | Acres in Land Use Types | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total[1] | Residence | Commerce | Industry | Vacant Land | Utility | Streets[1] | Other[2] |
| 1-A | 544.0 | 127.2 | 27.5 | 93.9 | 116.3 | 13.9 | 141.0 | 24.7 |
| 1-B | 583.0 | 101.0 | 17.7 | 144.3 | 72.3 | 15.9 | 132.0 | 99.3 |
| 2-A | 114.0 | 68.4 | 4.4 | --- | 3.0 | 0.1 | 38.0 | --- |
| 2-B | 156.0 | 96.5 | 7.2 | 1.0 | 1.3 | --- | 46.0 | 4.4 |
| 2-C | 151.0 | 91.0 | 5.6 | 1.1 | 1.4 | --- | 42.0 | 10.1 |
| 2-D | 150.0 | 87.3 | 3.7 | 1.3 | 1.4 | 2.8 | 42.0 | 11.9 |
| 3-A | 238.0 | 121.8 | 23.6 | 6.5 | 6.0 | 0.2 | 77.0 | 2.2 |
| 3-B | 134.0 | 83.6 | 4.7 | 0.3 | 2.2 | 0.1 | 39.0 | 4.0 |
| 3-C | 176.0 | 109.3 | 6.9 | --- | 2.3 | --- | 47.0 | 10.5 |
| 3-D | 248.0 | 149.3 | 4.0 | --- | 0.4 | 3.4 | 64.0 | 27.1 |
| 3-E | 196.0 | 132.7 | 1.9 | --- | 14.6 | 3.7 | 38.0 | 5.4 |
| 4-A | 188.0 | 98.2 | 8.0 | 9.7 | 5.9 | 7.2 | 53.0 | 6.6 |
| 4-B | 176.0 | 104.7 | 6.2 | 1.1 | 1.3 | --- | 52.0 | 10.5 |
| 4-C | 266.0 | 165.5 | 10.2 | --- | 1.2 | 1.1 | 69.0 | 18.8 |
| 4-D | 148.0 | 95.3 | 5.7 | 0.7 | 3.7 | 0.9 | 41.0 | 0.9 |
| 4-E | 226.0 | 127.2 | 6.3 | 7.3 | 6.9 | 2.3 | 67.0 | 9.4 |
| 5-A | 132.0 | 20.4 | 34.9 | 7.2 | 1.4 | --- | 40.0 | 27.2 |
| 5-B | 708.0 | 176.1 | 20.6 | 0.1 | 23.9 | 0.1 | 80.0 | 407.0 |
| 5-C | 342.0 | 158.9 | 0.1 | --- | 99.0 | 1.9 | 54.0 | 28.0 |
| 5-D | 141.0 | 83.6 | 6.3 | 0.9 | 1.1 | 3.1 | 37.0 | 9.3 |
| 5-E | 112.0 | 55.3 | 10.8 | 0.6 | 2.1 | --- | 30.0 | 12.1 |
| 6-A | 120.0 | 78.2 | 0.5 | --- | 2.3 | 0.2 | 37.0 | 2.0 |
| 6-B | 265.0 | 132.1 | --- | --- | 70.0 | --- | 60.0 | 2.9 |
| 6-C | 141.0 | 89.2 | --- | --- | 18.9 | --- | 29.0 | 3.5 |
| 6-D | 315.0 | 210.9 | * | --- | 20.1 | 8.6 | 61.0 | 14.3 |
| 6-E | 271.0 | 178.1 | 7.8 | --- | 4.3 | --- | 76.0 | 5.3 |
| City Total | 6,241.0 | 2,941.8 | 224.6 | 276.0 | 483.3 | 65.5 | 1,490.0 | 757.4 |

[1]There is no precise official figure for the total city acreage or for acreages in streets. Tract acreages have therefore been measured to yield an approximate city total acreage figure, and block acreages have been deducted from the gross tract acreage figures to yield approximate street acreages.

[2]Includes public and quasi-public uses, such as schools, parks, public buildings, hospitals, clubs, and churches.

*Less than 0.1 acres.

Source: Berkeley Department of City Planning, 1951 Land Use Inventory.
Details may not add to totals, due to rounding.

Table 4

ACREAGE OF MAJOR LAND USE TYPES BY CENSUS TRACT, AS PER CENT OF TOTAL ACREAGE OF TRACT, BERKELEY, 1951

| Census Tract | Per Cent of Acres in Land Use Types | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Residence | Commerce | Industry | Vacant Land | Utility | Streets | Other[1] |
| 1-A | 100.0 | 23.4 | 5.0 | 17.3 | 21.4 | 2.6 | 25.9 | 4.5 |
| 1-B | 100.0 | 17.3 | 3.0 | 24.8 | 12.4 | 2.7 | 22.6 | 17.0 |
| 2-A | 100.0 | 60.0 | 3.8 | --- | 2.6 | * | 33.3 | --- |
| 2-B | 100.0 | 61.8 | 4.6 | 0.6 | 0.8 | --- | 29.5 | 2.8 |
| 2-C | 100.0 | 60.3 | 3.7 | 0.7 | 0.9 | --- | 27.8 | 6.7 |
| 2-D | 100.0 | 58.2 | 2.5 | 0.9 | 0.9 | 1.9 | 28.0 | 7.9 |
| 3-A | 100.0 | 51.2 | 9.9 | 2.7 | 2.5 | 0.1 | 32.4 | 0.9 |
| 3-B | 100.0 | 62.4 | 3.5 | 0.2 | 1.6 | 0.1 | 29.1 | 3.0 |
| 3-C | 100.0 | 62.1 | 3.9 | --- | 1.3 | --- | 26.7 | 6.0 |
| 3-D | 100.0 | 60.2 | 1.6 | --- | 0.2 | 1.4 | 25.8 | 10.9 |
| 3-E | 100.0 | 67.7 | 1.0 | --- | 7.4 | 1.9 | 19.4 | 2.8 |
| 4-A | 100.0 | 52.2 | 4.2 | 5.2 | 3.1 | 3.8 | 28.2 | 3.5 |
| 4-B | 100.0 | 59.5 | 3.5 | 0.6 | 0.7 | --- | 29.5 | 6.0 |
| 4-C | 100.0 | 62.2 | 3.8 | --- | 0.4 | 0.4 | 25.9 | 7.1 |
| 4-D | 100.0 | 64.4 | 3.8 | 0.5 | 2.5 | 0.6 | 27.7 | 0.6 |
| 4-E | 100.0 | 56.3 | 2.8 | 3.2 | 3.0 | 1.0 | 29.6 | 4.2 |
| 5-A | 100.0 | 15.4 | 26.4 | 5.4 | 1.1 | --- | 30.3 | 20.6 |
| 5-B | 100.0 | 24.9 | 2.9 | * | 3.4 | * | 11.3 | 57.5 |
| 5-C | 100.0 | 46.5 | * | --- | 28.9 | 0.6 | 15.8 | 8.2 |
| 5-D | 100.0 | 59.3 | 4.5 | 0.6 | 0.8 | 2.2 | 26.2 | 6.6 |
| 5-E | 100.0 | 48.9 | 10.1 | 0.6 | | | 27.2 | |
| 6-A | 100.0 | 65.2 | 0.4 | --- | 1.9 | 0.2 | 30.8 | 1.7 |
| 6-B | 100.0 | 49.8 | --- | --- | 26.4 | --- | 22.6 | 1.1 |
| 6-C | 100.0 | 63.3 | --- | --- | 13.4 | --- | 20.6 | 2.5 |
| 6-D | 100.0 | 67.0 | * | --- | 6.4 | 2.7 | 19.4 | 4.5 |
| 6-E | 100.0 | 65.7 | 2.9 | --- | 1.6 | --- | 28.0 | 2.0 |
| City Total | 100.0 | 47.1 | 3.6 | 4.4 | 7.7 | 1.0 | 23.9 | 12.1 |

[1]Includes public and quasi-public uses, such as schools, parks, public buildings, hospitals, clubs, and churches.

*Less than 0.1 per cent.

Source: Berkeley Department of City Planning, 1951 Land Use Inventory.
Details may not add to totals, due to rounding.

Table 5

ACREAGE IN RESIDENTIAL DEVELOPMENT, BY TYPE OF DEVELOPMENT, FOR CENSUS TRACTS, BERKELEY, 1951

| Census Tract | Residential Acres: Number: Total | Number: Dwelling Units Per Parcel: 1 | 2 | 3-5 | 6-9 | 10+ | Other[1] | Per Cent: Total | Per Cent: Dwelling Units Per Parcel: 1 | 2 | 3-5 | 6-9 | 10+ | Other[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-A | 127.2 | 84.9 | 7.0 | 2.4 | 32.5 | --- | 0.4 | 100.0 | 66.7 | 5.5 | 1.9 | 25.6 | --- | 0.3 |
| 1-B | 101.0 | 77.2 | 15.9 | 7.2 | --- | --- | 0.5 | 100.0 | 76.4 | 15.7 | 7.1 | --- | --- | 0.5 |
| 2-A | 68.4 | 55.6 | 8.3 | 3.8 | 0.3 | 0.4 | --- | 100.0 | 81.3 | 12.1 | 5.6 | 0.4 | 0.6 | --- |
| 2-B | 96.5 | 58.9 | 20.3 | 14.3 | 1.8 | 0.2 | 1.0 | 100.0 | 61.0 | 21.0 | 14.8 | 1.9 | 0.2 | 1.0 |
| 2-C | 91.0 | 66.8 | 16.1 | 6.7 | 0.9 | --- | 0.5 | 100.0 | 73.4 | 17.7 | 7.4 | 1.0 | --- | 0.5 |
| 2-D | 87.3 | 77.5 | 6.5 | 2.3 | 1.0 | --- | --- | 100.0 | 88.8 | 7.4 | 2.6 | 1.1 | --- | --- |
| 3-A | 121.8 | 66.5 | 21.8 | 16.6 | 14.1 | 1.8 | 1.0 | 100.0 | 54.6 | 17.9 | 13.6 | 11.6 | 1.5 | 0.8 |
| 3-B | 83.6 | 48.5 | 15.1 | 13.0 | 3.3 | 2.6 | 1.1 | 100.0 | 58.0 | 18.1 | 15.6 | 3.9 | 3.1 | 1.3 |
| 3-C | 109.3 | 55.7 | 21.3 | 20.7 | 5.5 | 2.9 | 3.2 | 100.0 | 51.0 | 19.5 | 18.9 | 5.0 | 2.7 | 2.9 |
| 3-D | 149.3 | 99.2 | 14.9 | 10.9 | 3.7 | 2.0 | 18.6 | 100.0 | 66.4 | 10.0 | 7.3 | 2.5 | 1.3 | 12.4 |
| 3-E | 132.7 | 128.1 | 3.7 | 0.4 | 0.5 | 0.1 | --- | 100.0 | 96.5 | 2.8 | 0.3 | 0.4 | 0.1 | --- |
| 4-A | 98.2 | 76.2 | 11.8 | 7.1 | 1.3 | 1.6 | 0.2 | 100.0 | 77.6 | 12.0 | 7.2 | 1.3 | 1.6 | 0.2 |
| 4-B | 104.7 | 73.6 | 17.3 | 10.1 | 2.5 | 0.9 | 0.3 | 100.0 | 70.3 | 16.5 | 9.6 | 2.4 | 0.8 | 0.3 |
| 4-C | 165.5 | 127.7 | 22.2 | 11.6 | 2.3 | 0.9 | 0.8 | 100.0 | 77.2 | 13.4 | 7.0 | 1.4 | 0.5 | 0.5 |
| 4-D | 95.3 | 79.7 | 11.4 | 3.9 | 0.2 | --- | 0.1 | 100.0 | 83.6 | 12.0 | 4.1 | 0.2 | --- | 0.1 |
| 4-E | 127.2 | 94.9 | 15.1 | 10.4 | 1.6 | 3.7 | 1.5 | 100.0 | 74.6 | 11.9 | 8.2 | 1.2 | 2.9 | 1.2 |
| 5-A | 20.4 | 5.6 | 4.0 | 6.2 | 2.2 | 1.5 | 0.9 | 100.0 | 27.4 | 19.6 | 30.4 | 10.8 | 7.4 | 4.4 |
| 5-B | 176.1 | 42.9 | 16.9 | 19.2 | 12.8 | 16.0 | 68.3 | 100.0 | 24.4 | 9.6 | 10.9 | 7.3 | 9.1 | 38.8 |
| 5-C | 158.9 | 130.1 | 15.2 | 8.5 | 1.5 | 0.9 | 2.7 | 100.0 | 81.9 | 9.6 | 5.3 | 0.9 | 0.6 | 1.7 |
| 5-D | 83.6 | 48.8 | 18.3 | 13.0 | 2.2 | 0.5 | 0.8 | 100.0 | 58.4 | 21.9 | 15.6 | 2.6 | 0.6 | 1.0 |
| 5-E | 55.3 | 21.1 | 11.9 | 14.0 | 3.0 | 4.4 | 0.9 | 100.0 | 38.2 | 21.5 | 25.3 | 5.4 | 8.0 | 1.6 |
| 6-A | 78.2 | 73.0 | 4.7 | 0.3 | 0.2 | --- | --- | 100.0 | 93.4 | 6.0 | 0.4 | 0.2 | --- | --- |
| 6-B | 132.1 | 119.2 | 8.9 | 3.2 | 0.8 | --- | --- | 100.0 | 90.2 | 6.7 | 2.4 | 0.6 | --- | --- |
| 6-C | 89.2 | 87.2 | 2.0 | --- | --- | --- | --- | 100.0 | 97.8 | 2.2 | --- | --- | --- | --- |
| 6-D | 210.9 | 206.5 | 4.3 | 0.1 | --- | --- | --- | 100.0 | 97.9 | 2.0 | * | --- | --- | --- |
| 6-E | 178.1 | 174.6 | 2.6 | 0.9 | --- | --- | --- | 100.0 | 98.0 | 1.4 | 0.5 | --- | --- | --- |
| City Total | 2,941.8 | 2,180.8 | 317.5 | 206.8 | 94.2 | 40.4 | 102.8 | 100.0 | 74.1 | 10.8 | 7.0 | 3.2 | 1.4 | 3.5 |

[1]Includes hotels, rooming houses, fraternities, and sororities.

*Less than 0.1 per cent.

Source: Berkeley Department of City Planning, 1951 Land Use Inventory.
Details may not add to totals due to rounding.

Table 6

PARCELS IN RESIDENTIAL DEVELOPMENT, BY TYPE OF DEVELOPMENT, FOR CENSUS TRACTS, BERKELEY, 1951

| Census Tract | Parcels: Number: Total | Number: Dwelling Units Per Parcel: 1 | 2 | 3-5 | 6-9 | 10+ | Other[1] | Parcels: Per Cent: Total | Per Cent: Dwelling Units Per Parcel: 1 | 2 | 3-5 | 6-9 | 10+ | Other[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-A | 945 | 732 | 59 | 20 | 133 | --- | 1 | 100.0 | 77.5 | 6.2 | 2.1 | 14.1 | --- | 0.1 |
| 1-B | 857 | 661 | 141 | 53 | --- | --- | 2 | 100.0 | 77.1 | 16.5 | 6.3 | --- | --- | --- |
| 2-A | 595 | 502 | 60 | 30 | 2 | 1 | --- | 100.0 | 84.4 | 10.0 | 5.0 | 0.3 | 0.2 | --- |
| 2-B | 795 | 505 | 168 | 104 | 10 | 1 | 7 | 100.0 | 63.5 | 21.1 | 13.1 | 1.2 | 0.1 | 0.9 |
| 2-C | 809 | 614 | 133 | 50 | 7 | --- | 5 | 100.0 | 75.9 | 16.4 | 6.2 | 0.9 | --- | 0.6 |
| 2-D | 889 | 804 | 58 | 20 | 7 | --- | --- | 100.0 | 90.4 | 6.5 | 2.2 | 0.8 | --- | --- |
| 3-A | 977 | 632 | 180 | 132 | 18 | 9 | 6 | 100.0 | 64.7 | 18.4 | 13.5 | 1.8 | 0.9 | 0.6 |
| 3-B | 714 | 452 | 127 | 99 | 18 | 11 | 7 | 100.0 | 63.3 | 17.8 | 13.9 | 2.5 | 1.5 | 1.0 |
| 3-C | 812 | 468 | 139 | 139 | 31 | 14 | 21 | 100.0 | 57.6 | 17.1 | 17.1 | 3.8 | 1.7 | 2.6 |
| 3-D | 976 | 727 | 115 | 87 | 22 | 9 | 16 | 100.0 | 74.5 | 11.8 | 8.9 | 2.2 | 0.9 | 1.6 |
| 3-E | 575 | 556 | 10 | 4 | 4 | 1 | --- | 100.0 | 96.7 | 1.7 | 0.7 | 0.7 | 0.2 | --- |
| 4-A | 963 | 788 | 113 | 52 | 4 | 5 | 3 | 100.0 | 81.8 | 11.7 | 5.4 | 0.4 | 0.5 | 0.3 |
| 4-B | 939 | 702 | 143 | 70 | 16 | 6 | 3 | 100.0 | 74.8 | 15.2 | 7.4 | 1.7 | 0.6 | 0.3 |
| 4-C | 1,539 | 1,237 | 192 | 86 | 15 | 3 | 6 | 100.0 | 80.4 | 12.5 | 5.6 | 1.0 | 0.2 | 0.4 |
| 4-D | 950 | 809 | 111 | 28 | 1 | --- | 1 | 100.0 | 85.2 | 11.7 | 2.9 | 0.1 | --- | 0.1 |
| 4-E | 1,239 | 1,023 | 125 | 71 | 5 | 13 | 2 | 100.0 | 82.6 | 10.1 | 5.7 | 0.4 | 1.0 | 0.2 |
| 5-A | 155 | 49 | 30 | 47 | 17 | 7 | 5 | 100.0 | 31.6 | 19.4 | 30.3 | 11.0 | 4.5 | 3.2 |
| 5-B | 974 | 288 | 135 | 148 | 82 | 81 | 240 | 100.0 | 29.6 | 13.9 | 15.2 | 8.4 | 8.3 | 24.6 |
| 5-C | 873 | 720 | 94 | 38 | 9 | 3 | 9 | 100.0 | 82.5 | 10.8 | 4.4 | 1.0 | 0.3 | 1.0 |
| 5-D | 667 | 410 | 148 | 91 | 12 | 2 | 4 | 100.0 | 61.5 | 22.2 | 13.6 | 1.8 | 0.3 | 0.6 |
| 5-E | 453 | 190 | 108 | 106 | 20 | 22 | 7 | 100.0 | 41.9 | 23.8 | 23.4 | 4.4 | 4.8 | 1.5 |
| 6-A | 576 | 541 | 32 | 2 | 1 | --- | --- | 100.0 | 93.9 | 5.6 | 0.3 | 0.2 | --- | --- |
| 6-B | 810 | 743 | 51 | 13 | 3 | --- | --- | 100.0 | 91.7 | 6.3 | 1.6 | 0.4 | --- | --- |
| 6-C | 597 | 590 | 7 | --- | --- | --- | --- | 100.0 | 98.8 | 1.2 | --- | --- | --- | --- |
| 6-D | 1,265 | 1,238 | 26 | 1 | --- | --- | --- | 100.0 | 97.9 | 2.0 | 0.1 | --- | --- | --- |
| 6-E | 1,506 | 1,480 | 20 | 6 | --- | --- | --- | 100.0 | 98.3 | 1.3 | 0.4 | --- | --- | --- |
| City Total | 22,450 | 17,461 | 2,525 | 1,497 | 437 | 187 | 343 | 100.0 | 77.7 | 11.2 | 6.7 | 1.9 | 0.8 | 1.5 |

[1]Includes hotels, rooming houses, fraternities, and sororities.

Source: Berkeley Department of City Planning, 1951 Land Use Inventory.
Details may not add to totals due to rounding.

Table 7

EXISTING DENSITIES, ALLOWABLE DENSITIES UNDER BERKELEY ZONING ORDINANCE, AND PROPOSED DENSITIES, BERKELEY, 1951

| Density | Acres | | | Per Cent of Land | | |
|---|---|---|---|---|---|---|
| | Existing[1] | Allowable[2] | Proposed | Existing[1] | Allowable[2] | Proposed |
| Low..... | 1,123 | 1,051 | 1,229 | 38.1 | 35.6 | 41.8 |
| Low-Medium..... | 1,370 | 305 | 1,122 | 46.6 | 10.3 | 38.1 |
| High-Medium..... | 315 | 29 | 484 | 10.7 | 1.0 | 16.5 |
| High..... | 134 | 1,569 | 105 | 4.6 | 53.1 | 3.6 |
| All Residential Land.. | 2,942 | 2,954 | 2,940 | 100.0 | 100.0 | 100.0 |

[1]Berkeley Department of City Planning, 1951 Land Use Inventory.

[2]Derived from Berkeley Zoning Ordinance. Acreages in Zoning Districts have been adjusted for allowable non-residential land uses. The R-1 District is designated as Low Density, R-2 as Low-Medium, R-2-A as High-Medium, and R-3 and R-4 Districts as High Density.

Details may not add to totals, due to rounding.

Table 8

POPULATION[1], RESIDENTIAL ACREAGE[2], AND NET RESIDENTIAL DENSITY, BY CENSUS TRACT AND ENUMERATION DISTRICT, BERKELEY, 1950-1951

| Tract and Enum.Dist. | Popu-lation | Res'l Acres | Net Res'l Density | Tract and Enum.Dist. | Popu-lation | Res'l Acres | Net Res'l Density |
|---|---|---|---|---|---|---|---|
| Tract 1-A | 7,554 | 128.9 | 58.6 | Tract 2-D | 3,156 | 88.0 | 35.9 |
| 105 | 624 | 6.1 | 102.3 | 199 | 724 | 24.4 | 29.7 |
| 106 | 742 | 5.7 | 130.2 | 200 | 526 | 15.4 | 34.2 |
| 107 | 764 | 7.6 | 100.5 | 201 | 714 | 19.6 | 36.4 |
| 108 | 729 | 9.0 | 81.0 | 202 | 650 | 14.9 | 43.6 |
| 109 | 571 | 15.1 | 37.8 | 203 | 532 | 13.7 | 38.8 |
| 110 | 682 | 6.1 | 111.8 | | | | |
| 111 | 773 | 12.3 | 63.0 | Tract 3-A | 6,221 | 126.2 | 49.3 |
| 112 | 471 | 12.0 | 39.3 | 182 | 694 | 16.1 | 43.1 |
| 113 | 665 | 21.1 | 31.5 | 183 | 483 | 9.5 | 50.8 |
| 114 | 557 | 13.2 | 42.2 | 184 | 1,051 | 20.7 | 50.8 |
| 115 | 532 | 11.9 | 44.7 | 185 | 665 | 12.7 | 52.4 |
| 116 | 432 | 8.8 | 49.1 | 186 | 244 | 5.0 | 48.8 |
| | | | | 187 | 665 | 15.0 | 44.3 |
| Tract 1-B | 4,322 | 103.0 | 42.8 | 188 | 736 | 16.1 | 45.7 |
| 117 | 328 | 7.5 | 43.7 | 189 | 425 | 8.3 | 51.2 |
| 118 | 657 | 15.3 | 42.9 | 190 | 356 | 6.2 | 57.4 |
| 119 | 605 | 15.7 | 38.5 | 191 | 483 | 9.8 | 49.3 |
| 120 | 790 | 18.3 | 43.2 | 192 | 296 | 6.8 | 43.5 |
| 121 | 892 | 20.2 | 44.2 | | | | |
| 122 | 336 | 6.7 | 50.1 | Tract 3-B | 3,814 | 84.7 | 45.0 |
| 123 | 717 | 19.2 | 37.3 | 174 | 383 | 5.9 | 64.9 |
| | | | | 175 | 499 | 10.5 | 47.5 |
| Tract 2-A | 2,825 | 69.0 | 40.9 | 176 | 501 | 10.2 | 49.1 |
| 204 | 489 | 12.8 | 38.2 | 177 | 577 | 15.5 | 37.2 |
| 205 | 610 | 14.9 | 40.9 | 178 | 411 | 8.1 | 50.7 |
| 206 | 669 | 15.6 | 42.9 | 179 | 441 | 11.3 | 39.0 |
| 207 | 572 | 14.8 | 38.6 | 180 | 386 | 9.0 | 42.8 |
| 208 | 512 | 10.9 | 47.0 | 181 | 600 | 14.2 | 42.2 |
| Tract 2-B | 5,018 | 96.5 | 52.0 | Tract 3-C | 5,137 | 111.4 | 46.1 |
| 209 | 863 | 16.9 | 51.1 | 164 | 501 | 8.9 | 56.3 |
| 210 | 689 | 16.5 | 41.8 | 165 | 740 | 9.2 | 79.6 |
| 211 | 486 | 12.2 | 39.8 | 166 | 529 | 11.2 | 46.8 |
| 212 | 1,011 | 20.2 | 50.0 | 167 | 519 | 12.5 | 41.5 |
| 213 | 761 | 11.7 | 65.0 | 168 | 609 | 18.0 | 33.8 |
| 214 | 397 | 7.6 | 52.2 | 169A | 212 | 6.1 | 34.8 |
| 215 | 709 | 13.9 | 51.0 | 169B | 308 | 8.8 | 35.0 |
| | | | | 170 | 399 | 9.7 | 41.1 |
| Tract 2-C | 3,658 | 91.5 | 40.0 | 171 | 540 | 10.1 | 53.5 |
| 193 | 855 | 18.2 | 47.0 | 172 | 358 | 7.7 | 46.5 |
| 194 | 631 | 19.0 | 33.2 | 173 | 396 | 9.2 | 43.0 |
| 195 | 607 | 17.2 | 35.3 | | | | |
| 196 | 757 | 18.1 | 41.8 | Tract 3-D | 5,090 | 150.2 | 33.9 |
| 197 | 366 | 7.9 | 46.3 | 155S-1&156 | 534 | 16.4 | 32.5 |
| 198 | 443 | 11.1 | 39.9 | 155S-2 | 20 | 1.1 | 18.2 |
| | | | | 155S-3 | 733 | 14.4 | 50.9 |
| | | | | 157 | 759 | 15.3 | 49.6 |
| | | | | 158 | 492 | 13.1 | 37.6 |

-Continued-

Table 8, Continued

POPULATION[1], RESIDENTIAL ACREAGE[2], AND NET RESIDENTIAL DENSITY, BY CENSUS TRACT AND ENUMERATION DISTRICT, BERKELEY, 1950-1951

| Tract and Enum.Dist. | Popu-lation | Res'l Acres | Net Res'l Density | Tract and Enum.Dist. | Popu-lation | Res'l Acres | Net Res'l Density |
|---|---|---|---|---|---|---|---|
| Tract 3-D, Cont'd | | | | Tract 4-D | 3,313 | 95.3 | 34.8 |
| 159 | 584 | 29.7 | 19.7 | 91 | 408 | 15.8 | 25.8 |
| 160 | 405 | 11.9 | 34.3 | 92 | 343 | 10.9 | 31.5 |
| 161 | 559 | 16.4 | 34.1 | 93 | 539 | 14.3 | 37.7 |
| 162 | 491 | 17.0 | 28.9 | 94 | 521 | 14.4 | 36.2 |
| 163 | 494 | 14.9 | 33.2 | 95 | 564 | 13.3 | 42.4 |
| | | | | 96 | 946 | 27.5 | 37.1 |
| Tract 3-E | 1,974 | 132.7 | 14.9 | Tract 4-E | 4,785 | 128.0 | 37.4 |
| 151 | 348 | 34.6 | 10.0 | 97 | 661 | 21.9 | 30.2 |
| 152 | 571 | 46.2 | 12.4 | 98 | 524 | 16.5 | 31.8 |
| 153 | 305 | 11.7 | 21.0 | 99 | 484 | 12.1 | 40.0 |
| 154 | 739 | 40.2 | 18.4 | 100 | 750 | 22.2 | 33.8 |
| | | | | 101 | 364 | 11.2 | 32.5 |
| Tract 4-A | 3,708 | 99.7 | 37.2 | 102 | 479 | 12.8 | 37.4 |
| 124 | 375 | 10.3 | 36.4 | 103 | 799 | 15.6 | 51.2 |
| 125 | 449 | 13.6 | 33.0 | 104 | 721 | 15.7 | 45.9 |
| 126 | 374 | 7.2 | 51.9 | | | | |
| 127 | 513 | 14.6 | 35.1 | Tract 5-A | 2,277 | 25.1 | 88.9 |
| 128 | 657 | 19.6 | 33.5 | 142 | 255 | 1.0 | 255.0 |
| 129 | 264 | 6.4 | 41.2 | 143 & 147 | 267 | 1.0 | 267.0 |
| 130 | 560 | 14.4 | 38.9 | 144 | 191 | 2.6 | 73.5 |
| 131 | 507 | 13.6 | 37.5 | 145 | 352 | 7.0 | 50.3 |
| | | | | 146 & 157 | 275 | 3.3 | 83.3 |
| Tract 4-B | 4,615 | 107.0 | 43.1 | 148 | 193 | 1.7 | 113.5 |
| 132 | 374 | 7.3 | 51.2 | 149 | 318 | 3.8 | 83.7 |
| 133 | 562 | 12.1 | 46.4 | 150 | 442 | 4.7 | 94.0 |
| 134 & 135 | 588 | 10.5 | 56.0 | | | | |
| 136 | 453 | 12.2 | 37.1 | Tract 5-B | 15,009 | 179.5 | 86.6 |
| 137 | 635 | 13.3 | 47.7 | 36 | 225 | 8.5 | 26.5 |
| 138 | 498 | 11.3 | 44.0 | 37 | 245 | 6.9 | 35.5 |
| 139 | 442 | 13.3 | 33.2 | 38 | 508 | 8.4 | 60.5 |
| 140 | 529 | 12.8 | 41.3 | 39 | 318 | 6.1 | 52.1 |
| 141 | 513 | 14.2 | 36.1 | 40 | 351 | 7.0 | 50.1 |
| | | | | 41 | 659 | 12.8 | 51.5 |
| Tract 4-C | 5,994 | 167.0 | 35.9 | 42 | 584 | 4.7 | 124.2 |
| 80 | 432 | 15.2 | 28.4 | 43 | 876 | 5.8 | 151.0 |
| 81 | 390 | 13.1 | 29.8 | 44 | 521 | 6.5 | 80.2 |
| 82 | 486 | 16.2 | 30.0 | 45A-1 | 600 | 2.3 | 260.9 |
| 83 | 674 | 18.6 | 36.2 | 45A-2 | 362 | 0.6 | 603.3 |
| 84 | 508 | 14.3 | 35.5 | 45B-1 | 185 | 6.7 | 27.6 |
| 85 | 564 | 14.0 | 40.3 | 45B-2 | 90 | 3.4 | 264.7 |
| 86 | 680 | 20.5 | 33.2 | 45B-3 | 204 | 2.0 | 102.0 |
| 87 | 495 | 14.0 | 35.4 | 45C | 454 | 4.6 | 98.7 |
| 88 | 380 | 8.5 | 44.7 | 46 | 904 | 21.2 | 42.6 |
| 89 | 615 | 16.8 | 36.6 | 47 | 569 | 8.7 | 65.4 |
| 90 | 768 | 15.8 | 48.6 | 48 | 630 | 5.9 | 106.8 |

-Continued-

POPULATION[1], RESIDENTIAL ACREAGE[2], AND NET RESIDENTIAL DENSITY, BY CENSUS TRACT AND ENUMERATION DISTRICT, BERKELEY, 1950-1951

| Tract and Enum.Dist. | Popu-lation | Res'l Acres | Net Res'l Density | Tract and Enum.Dist. | Popu-lation | Res'l Acres | Net Res'l Density |
|---|---|---|---|---|---|---|---|
| Tract 5-B, Cont'd | | | | Tract 6-A | 1,978 | 78.2 | 25.3 |
| | | | | 21 | 563 | 22.4 | 25.1 |
| 49 | 270 | 1.8 | 150.0 | 22 | 610 | 23.5 | 26.0 |
| 50 | 295 | 2.3 | 128.3 | 23 | 431 | 15.2 | 28.4 |
| 52 | 427 | 3.4 | 125.6 | 24 | 363 | 17.1 | 21.2 |
| 53 | 450 | 5.3 | 84.9 | | | | |
| 54 & 62 | 321 | 2.5 | 128.5 | Tract 6-B | 2,629 | 132.1 | 19.9 |
| 55 | 433 | 2.6 | 166.5 | 25 | 412 | 26.6 | 15.5 |
| | | | | 26 | 530 | 23.4 | 22.6 |
| 56 & 51 | 441 | 3.5 | 126.0 | 27 | 455 | 19.7 | 23.1 |
| 58 | 998 | 7.1 | 140.6 | 28 | 627 | 26.3 | 23.8 |
| 59 | 364 | 3.4 | 107.1 | 29 | 604 | 36.1 | 16.7 |
| 60 | 621 | 5.9 | 105.3 | | | | |
| 61 | 330 | 3.7 | 89.0 | Tract 6-C | 1,789 | 89.2 | 20.1 |
| 63 | 464 | 3.7 | 125.4 | 1 | 685 | 36.3 | 18.8 |
| 64 | 454 | 6.2 | 73.2 | 2 | 595 | 27.1 | 21.9 |
| 65 | 699 | 6.0 | 116.5 | 3 | 564 | 25.8 | 21.9 |
| Tract 5-C | 3,461 | 158.9 | 21.9 | Tract 6-D | 4,151 | 210.9 | 19.7 |
| 30 | 728 | 52.2 | 13.9 | 4 | 958 | 46.2 | 20.3 |
| 31 | 351 | 17.2 | 20.4 | 5 | 563 | 27.6 | 20.4 |
| 32 | 473 | 17.5 | 27.0 | 6 | 374 | 19.1 | 19.6 |
| 33 | 433 | 31.8 | 13.6 | 7 | 628 | 30.4 | 20.7 |
| 34 | 448 | 29.8 | 15.0 | 8 | 351 | 24.0 | 14.6 |
| 35 | 175 | 10.4 | 16.8 | 9 | 606 | 31.0 | 19.5 |
| | | | | 10 | 556 | 32.6 | 17.1 |
| Tract 5-D | 3,112 | 85.1 | 36.6 | | | | |
| 66 | 555 | 22.7 | 24.4 | Tract 6-E | 4,750 | 178.1 | 26.7 |
| 67A | 305 | 9.2 | 33.2 | 11 | 496 | 23.7 | 20.9 |
| 67B | 476 | 9.1 | 52.3 | 12 | 416 | 12.2 | 34.1 |
| 68 | 733 | 18.1 | 40.5 | 13 | 391 | 13.4 | 29.2 |
| 69 | 471 | 11.9 | 39.6 | 14 | 529 | 21.0 | 25.2 |
| 70 | 577 | 14.1 | 40.9 | 15 | 545 | 19.5 | 28.0 |
| | | | | 16 | 461 | 14.6 | 31.6 |
| Tract 5-E | 3,465 | 56.9 | 61.4 | 17 | 327 | 12.9 | 25.3 |
| 71 | 678 | 8.0 | 84.8 | 18 | 539 | 21.9 | 24.6 |
| 72 | 387 | 5.4 | 71.7 | 19 | 471 | 19.6 | 24.0 |
| 73 | 448 | 10.7 | 41.9 | 20 | 593 | 20.7 | 28.6 |
| 74 | 453 | 10.4 | 43.6 | | | | |
| 75 | 335 | 6.6 | 50.8 | | | | |
| 76 | 301 | 4.4 | 68.4 | City Total | 113,805 | 2,973.1 | 38.3 |
| 77 | 455 | 7.6 | 59.9 | | | | |
| 78 | 394 | 3.6 | 109.3 | | | | |
| 79 | 27 | 0.2 | 135.0 | | | | |

[1]Population data for Census Tracts and for the City Total are final counts of the 1950 Census of Population, yielding 113,805 persons. Enumeration District figures are preliminary counts of the 1950 Census of Population, yielding 112,460. Enumeration District figures will therefore not add to Tract totals.

[2]Acreage figures include residential uses over commercial and industrial establishments. These totals are therefore slightly higher than those appearing elsewhere in this report.

Source: Derived from data from Department of City Planning, Berkeley, California, 1950 Land Use Inventory, and from data from Bureau of the Census, Seventeenth Census of Population, 1950.

Details may not add to totals, due to rounding.

Table 9

NUMBER OF PERSONS PER HOUSEHOLD,
BY SIZE OF HOUSEHOLD, BERKELEY, 1940

| Size of Household | Number of Households | Per Cent of All Households |
|---|---|---|
| 1 person..... | 3,502 | 12.4 |
| 2 persons..... | 9,232 | 32.7 |
| 3 persons..... | 6,791 | 24.0 |
| 4 persons..... | 4,766 | 16.9 |
| 5 persons..... | 2,307 | 8.1 |
| 6 persons..... | 887 | 3.1 |
| 7 persons..... | 382 | 1.3 |
| 8 persons..... | 165 | .5 |
| 9 persons..... | 83 | .25 |
| 10 persons..... | 50 | .17 |
| 11 persons or more..... | 45 | .16 |
| Total number of occupied households... | 28,210 | 100.00 |

Source: U. S. Bureau of the Census, Sixteenth Census of Housing, Vol. II, Table 23, p. 267. Taken from Population and Economic Data, Berkeley 1910-40, Department of City Planning, Berkeley, California, July 1949, Table 15, p. 23.

Table 10

AGE COMPOSITIONS OF POPULATIONS OF BERKELEY, OAKLAND, AND THE NINE BAY AREA COUNTIES, AS PERCENTAGES OF TOTAL POPULATION OF EACH, 1940.

| Age Groups | Per Cent | | |
|---|---|---|---|
| | Berkeley | Oakland | Nine Bay Area Counties |
| Under 5 years..... | 5.1 | 5.7 | 5.6 |
| 5 to 9 years..... | 4.8 | 5.4 | 5.3 |
| 10 to 14 years..... | 6.1 | 6.1 | 6.1 |
| 15 to 19 years..... | 7.7 | 7.5 | 7.4 |
| 20 to 24 years..... | 9.9 | 8.2 | 8.2 |
| 25 to 29 years..... | 9.2 | 8.9 | 8.8 |
| 30 to 34 years..... | 7.9 | 8.7 | 8.7 |
| 35 to 39 years..... | 7.5 | 8.1 | 8.4 |
| 40 to 44 years..... | 7.4 | 7.9 | 8.1 |
| 45 to 49 years..... | 7.4 | 7.5 | 7.6 |
| 50 to 54 years..... | 7.0 | 7.0 | 7.0 |
| 55 to 59 years..... | 6.0 | 5.9 | 5.8 |
| 60 to 64 years..... | 4.8 | 4.7 | 4.7 |
| 65 to 69 years..... | 3.7 | 3.5 | 3.5 |
| 70 to 74 years..... | 2.6 | 2.4 | 2.4 |
| 75 years and over... | 2.8 | 2.5 | 2.3 |
| Total..... | 100.0 | 100.0 | 100.0 |

Source: Population and Economic Data, Berkeley 1910-1940, Department of City Planning, Berkeley, July 1949, Tables 5 and 6, pp. 8-10.

Table 11

POPULATION TRENDS[1] AND FORECASTS, SELECTED AREAS, 1860-1970

| Date | United States | California | Northern California | Nine Bay Area Counties | San Francisco | Berkeley | University of California[7] |
|---|---|---|---|---|---|---|---|
| 1860 | 31,443,321 | 379,994 | 355,243 | 114,074 | 56,802 | -- | -- |
| 1870 | 38,558,371 | 560,247 | 528,215 | 265,808 | 149,473 | -- | 40 |
| 1880 | 50,155,783 | 864,694 | 800,593 | 422,128 | 233,959 | -- | 268 |
| 1890 | 62,947,714 | 1,213,398 | 1,012,046 | 547,618 | 298,997 | 5,101 | 401 |
| 1900 | 75,994,575 | 1,485,053 | 1,180,842 | 658,111 | 342,782 | 13,214 | 1,988 |
| 1910 | 91,972,266 | 2,377,549 | 1,626,239 | 925,708 | 416,912 | 40,434 | 3,352 |
| 1920 | 105,710,620 | 3,426,861 | 2,079,811 | 1,182,911 | 506,676 | 56,036 | 9,967 |
| 1930 | 122,775,046 | 5,677,251 | 2,744,456 | 1,578,009 | 634,394 | 82,109 | 11,383 |
| 1940 | 131,669,275 | 6,907,387 | 3,235,024 | 1,734,308 | 634,536 | 85,547 | 17,744 |
| 1950 | 150,697,361 | 10,586,223 | 4,891,498 | 2,681,322 | 775,357 | 106,000[6] | 25,654 |
| 1960 | 175,000,000[2]<br>165,000,000 | 14,000,000[2]<br>12,500,000 | 6,000,000[3] | 3,300,000[2]<br>3,000,000 | -- | 110,000[5] | -- |
| 1970 | 195,000,000[2]<br>180,000,000 | 17,500,000[2]<br>15,000,000 | -- | 3,800,000[2]<br>3,300,000 | 950,000[4]<br>761,000 | -- | -- |

[1]1860-1950 data: Bureau of the Census.

[2]V. B. Stanbery, Better Population Forecasts for Areas and Communities, May, 1951, p. 41. (Unpublished manuscript)

[3]San Francisco Chamber of Commerce, San Francisco and the Bay Area, an Economic Survey and Yearly Review, 1951, p. 11.

[4]De Leux-Cather and L. Segoe, Transportation Plan for San Francisco, November, 1948, Plate I-6.

[5]L. Standish Hall, Report on Area, Population, and Water Consumption of the East Bay Municipal Utility District and the Special Sewer District No. 1, Part II, Growth and Distribution of Population, January, 1946.

[6]Estimated Berkeley population minus University students, who were not enumerated prior to 1950. Official count of the 1950 Census of Population is 113,805. Holding capacity of the Interim General Plan for Berkeley is approximately 150,000 persons; since no time scale can be placed against the holding capacity figure, it is not possible to represent it here. (See Table 1 for holding capacity estimating procedure.)

[7]Registrar, University of California, Statistical Addenda for the Year 1949-50.

Table 12

POPULATION, ECONOMIC ACTIVITY, AND LAND AREA FOR ECONOMIC AREAS OF NORTHERN CALIFORNIA, 1860-1950, AS COMPARED TO 1950 POPULATION DISTRIBUTION

| | Economic Area | Percentages of Northern California Total (Cumulated outward from San Francisco) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Population | | | | | | Agric. Sales | Value Added by Manuf. | | Whsle. Sales | College Enrollment | Land Area |
| | | 1950 | 1860 | 1880 | 1900 | 1920 | 1940 | 1945 | 1919 | 1947 | 1948 | 1950 | ---- |
| Central Cities | 1. San Francisco..... | 16 | 16 | 30 | 29 | 25 | 19 | 0 | 29 | 24 | 60 | 22 | 0 |
| | 2. +Oakland..... | 24 | 17 | 34 | 35 | 35 | 28 | 0 | 42 | 36 | 69 | 24 | 0 |
| | 3. +Berkeley..... | 26 | 17 | 34 | 36 | 38 | 31 | 0 | 44 | 39 | 70 | 44 | 0 |
| Outer Bay Region | 4. +Bal. Alameda Ct..... | 31 | 19 | 37 | 40 | 41 | 35 | 2 | 49 | 48 | 72 | 45 | 1 |
| | 5. +Contra Costa, Solano.. | 39 | 22 | 41 | 44 | 46 | 40 | 5 | 63 | 58 | 73 | 46 | 2 |
| | 6. +Marin, San Mateo..... | 45 | 24 | 44 | 46 | 49 | 45 | 8 | 67 | 61 | 74 | 50 | 3 |
| Bay-Delta Core | 7. +Santa Clara..... | 51 | 27 | 48 | 51 | 54 | 51 | 12 | 71 | 68 | 76 | 69 | 4 |
| | 8. +Napa, Sonoma..... | 54 | 32 | 53 | 56 | 57 | 54 | 19 | 73 | 70 | 77 | 72 | 6 |
| | 9. +Sacramento Ct..... | 60 | 39 | 57 | 60 | 62 | 59 | 22 | 76 | 73 | 81 | 76 | 7 |
| | 10. +San Joaquin Ct..... | 64 | 41 | 60 | 63 | 66 | 63 | 30 | 79 | 77 | 83 | 80 | 9 |
| Appendages | 11. +Stanislaus, Merced.... | 68 | 42 | 62 | 64 | 69 | 67 | 40 | * | 79 | 84 | 81 | 12 |
| | 12. +Sacramento Valley..... | 72 | 53 | 70 | 70 | 74 | 71 | 52 | * | 82 | 86 | 85 | 20 |
| | 13. +South Coast Ct's..... | 77 | 56 | 75 | 76 | 78 | 76 | 60 | * | 83 | 88 | 90 | 27 |
| Upper San Joaquin | 14. +Madera, Fresno..... | 83 | 57 | 76 | 80 | 85 | 82 | 74 | * | 87 | 92 | 95 | 34 |
| | 15. +Kings, Tulare, Kern... | 93 | 59 | 79 | 83 | 91 | 91 | 94 | * | 90 | 96 | 99 | 47 |
| Outer Mtn. Rim | 16. +North Coast..... | 95 | 62 | 83 | 88 | 95 | 94 | 96 | * | 93 | 97 | 100 | 56 |
| | 17. +Sierra..... | 98 | 95 | 97 | 96 | 98 | 97 | 98 | * | 97 | 100 | 100 | 80 |
| | 18. +Cascade..... | 100 | 100 | 100 | 100 | 100 | 100 | 100 | * | 100 | 100 | 100 | 100 |
| N. Calif. | 18. = Total N. Calif..... | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

*Not computed.

Source: Derived from reports of the Bureau of the Census.

Table 13

NUMBER OF MANUFACTURING ESTABLISHMENTS, VALUE ADDED BY MANUFACTURE, AND NUMBER OF PRODUCTION WORKERS, BY COUNTY, BAY REGION, 1939-1947

| County | Establishments | | | | | Value Added by Manufacture | | | | | Production Workers | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number | | Per Cent of Bay Region | | Per Cent Change | Volume ($000,000) | | Per Cent of Bay Region | | Per Cent Change | Number (000) | | Per Cent of Bay Region | | Per Cent Change |
| | 1939 | 1947 | 1939 | 1947 | 1939-47 | 1939 | 1947 | 1939 | 1947 | 1939-47 | 1939 | 1947 | 1939 | 1947 | 1939-47 |
| Alameda..... | 893 | 1,186 | 23.9 | 27.3 | 32.8 | 122 | 409 | 30.6 | 34.1 | 235.4 | 27 | 54 | 30.7 | 35.8 | 101.3 |
| Contra Costa..... | 115 | 168 | 3.1 | 3.9 | 46.1 | 81 | 155 | 20.4 | 13.0 | 90.5 | 13 | 20 | 15.2 | 13.3 | 50.9 |
| Marin..... | 42 | 57 | 1.1 | 1.3 | 35.7 | 1 | 3 | 0.3 | 0.3 | 191.9 | (1) | (1) | 0.3 | 0.4 | 134.8 |
| Napa..... | 57 | 68 | 1.5 | 1.6 | 19.3 | 2 | 12 | 0.5 | 1.0 | 565.6 | 1 | 2 | 0.8 | 1.0 | 120.4 |
| San Francisco.... | 2,032 | 1,990 | 54.5 | 45.9 | -2.1 | 137 | 410 | 34.3 | 34.2 | 199.9 | 31 | 48 | 35.9 | 31.7 | 52.0 |
| San Mateo..... | 97 | 228 | 2.6 | 5.2 | 135.1 | 15 | 60 | 3.8 | 5.0 | 296.9 | 3 | 8 | 3.9 | 5.1 | 12.2 |
| Santa Clara..... | 289 | 424 | 7.8 | 9.8 | 46.7 | 30 | 118 | 7.4 | 9.8 | 297.9 | 9 | 16 | 10.6 | 10.3 | 67.8 |
| Solano..... | 34 | 42 | 0.9 | 1.0 | 23.5 | 5 | 11 | 1.3 | 0.9 | 111.2 | 1 | 1 | 0.8 | 0.7 | 35.7 |
| Sonoma..... | 172 | 176 | 4.6 | 4.1 | 2.3 | 6 | 19 | 1.4 | 1.6 | 235.6 | 2 | 2 | 1.7 | 1.7 | 64.2 |
| Bay Region Total | 3,731 | 4,339 | 100.0 | 100.0 | 16.3 | 399 | 1,198 | 100.0 | 100.0 | 200.3 | 88 | 151 | 100.0 | 100.0 | 72.2 |

(1) Less than 1,000 production workers.

Source: U. S. Census of Manufactures, 1939 and 1947.

Details may not add to totals due to rounding.

Table 14

NUMBER OF MANUFACTURING ESTABLISHMENTS, VALUE ADDED BY MANUFACTURE, AND NUMBER OF PRODUCTION WORKERS, BY CITY, ALAMEDA COUNTY, 1939-1947

| City | Establishments | | | | | Value Added by Manufacture | | | | | Production Workers | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number | | Per Cent of County | | Per Cent Change | Volume ($000,000) | | Per Cent of County | | Per Cent Change | Number (000) | | Per Cent of County | | Per Cent Change |
| | 1939 | 1947 | 1939 | 1947 | 1939-47 | 1939 | 1947 | 1939 | 1947 | 1939-47 | 1939 | 1947 | 1939 | 1947 | 1939-47 |
| Alameda..... | 37 | 48 | 4.1 | 4.0 | 29.8 | 3 | 31 | 3.0 | 7.7 | 1,013. | 0.9 | 7.4 | 2.3 | 13.0 | 757.0 |
| Albany..... | 2 | 5 | 0.2 | 0.4 | 150.0 | - | (2) | (1) | (1) | - | - | (3) | (1) | 3.1 | - |
| Berkeley..... | 135 | 187 | 15.0 | 15.0 | 38.5 | 15 | 54 | 10.0 | 13.2 | 259. | 2.7 | 6.2 | 12.4 | 11.0 | 124.5 |
| Oakland..... | 549 | 701 | 61.0 | 59.0 | 27.7 | 68 | 208 | 59.0 | 50.8 | 207. | 15.9 | 25.6 | 54.6 | 47.0 | 67.5 |
| San Leandro..... | 16 | 36 | 1.8 | 3.0 | 125.0 | 2 | 18 | 2.5 | 4.4 | 827. | 0.7 | 3.0 | 1.6 | 5.0 | 343.0 |
| Balance of County | 154 | 209 | 18.0 | 18.6 | 35.7 | 34 | 98 | 25.5 | 23.9 | 180. | 6.6 | 12.1 | 29.1 | 20.9 | 82.9 |
| County Total.... | 893 | 1,186 | 100.0 | 100.0 | 32.8 | 122 | 409 | 100.0 | 100.0 | 235. | 26.8 | 54.0 | 100.0 | 100.0 | 101.3 |

(1) Less than 0.1 per cent.

(2) Less than $1,000,000 value added by manufacture.

(3) Less than 1,000 production workers.

Source: U. S. Census of Manufactures, 1939 and 1947.

Details may not add to totals due to rounding.

Table 15

NUMBER OF RETAIL ESTABLISHMENTS, VOLUME OF RETAIL SALES, AND NUMBER OF RETAIL EMPLOYEES, BY COUNTY, BAY REGION, 1939-1948

| County | Establishments | | | | | Sales | | | | | Employees | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number (000) | | Per Cent of Bay Region | | Per Cent Change | Volume ($000,000) | | Per Cent of Bay Region | | Per Cent Change | Number (000) | | Per Cent of Bay Region | | Per Cent Change |
| | 1939 | 1948 | 1939 | 1948 | 1939-48 | 1939 | 1948 | 1939 | 1948 | 1939-48 | 1939 | 1948 | 1939 | 1948 | 1939-48 |
| Alameda..... | 7.9 | 8.6 | 27.8 | 28.7 | 8.1 | 250 | 808 | 29.3 | 27.6 | 222. | 25.4 | 40.2 | 28.0 | 28.5 | 57.2 |
| Contra Costa..... | 1.5 | 2.6 | 5.2 | 8.8 | 78.3 | 34 | 193 | 3.9 | 6.9 | 463. | 2.5 | 7.5 | 2.8 | 5.4 | 119.0 |
| Marin..... | 0.8 | 0.8 | 2.7 | 2.6 | - | 18 | 66 | 2.1 | 2.4 | 260. | 1.6 | 2.9 | 1.7 | 2.0 | 84.0 |
| Napa..... | 0.4 | 0.5 | 1.4 | 1.6 | 14.6 | 11 | 39 | 1.3 | 1.4 | 241. | 0.9 | 1.6 | 1.0 | 1.2 | 80.3 |
| San Francisco..... | 11.3 | 10.2 | 39.5 | 34.5 | -9.5 | 384 | 1,033 | 43.8 | 36.8 | 170. | 44.8 | 58.4 | 49.4 | 41.5 | 30.2 |
| San Mateo..... | 1.7 | 1.9 | 5.9 | 6.4 | 13.4 | 43 | 177 | 5.0 | 6.3 | 308. | 3.6 | 7.9 | 4.0 | 5.6 | 91.0 |
| Santa Clara..... | 2.8 | 2.8 | 9.7 | 9.5 | 2.0 | 80 | 280 | 9.1 | 10.0 | 250. | 7.6 | 13.5 | 8.4 | 9.6 | 76.3 |
| Solano..... | 0.7 | 1.0 | 2.6 | 3.3 | 32.2 | 19 | 88 | 2.2 | 3.1 | 365. | 1.7 | 3.9 | 1.8 | 2.8 | 134.0 |
| Sonoma..... | 1.4 | 1.4 | 4.9 | 4.6 | -4.0 | 36 | 126 | 4.1 | 4.5 | 253. | 2.8 | 5.0 | 3.0 | 3.5 | 80.0 |
| Bay Region Total | 28.6 | 29.8 | 100.0 | 100.0 | 4.4 | 876 | 2,812 | 100.0 | 100.0 | 221. | 91.0 | 140.9 | 100.0 | 100.0 | 54.9 |

Source: U. S. Census of Business, Retail Trade.

Data includes warehouses.
Details may not add to totals due to rounding.

Table 16

NUMBER OF RETAIL ESTABLISHMENTS, VOLUME OF RETAIL SALES, AND NUMBER OF RETAIL EMPLOYEES, BY CITY, ALAMEDA COUNTY, 1939-1948

| City | Establishments | | | | | Sales | | | | | Employees | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number | | Per Cent of County | | Per Cent Change | Volume ($000,000) | | Per Cent of County | | Per Cent Change | Number (000) | | Per Cent of County | | Per Cent Change |
| | 1939 | 1948 | 1939 | 1948 | 1939-48 | 1939 | 1948 | 1939 | 1948 | 1939-48 | 1939 | 1948 | 1939 | 1948 | 1939-48 |
| Alameda..... | 357 | 420 | 4.5 | 4.9 | 17.6 | 9.6 | 39.2 | 3.8 | 4.9 | 309. | 0.7 | 1.5 | 2.9 | 3.7 | 100.6 |
| Albany..... | 109 | 158 | 1.5 | 1.8 | 45.0 | 2.8 | 14.0 | 1.1 | 1.7 | 399. | 0.2 | 0.4 | 0.6 | 1.0 | 164.0 |
| Berkeley..... | 1,134 | 1,128 | 14.3 | 13.2 | -0.5 | 34.3 | 103.1 | 13.7 | 12.7 | 201. | 3.4 | 4.7 | 13.6 | 11.6 | 35.8 |
| Emeryville..... | -- | 77 | -- | 0.9 | -- | -- | 5.6 | -- | 0.7 | -- | -- | 0.3 | -- | 0.7 | -- |
| Hayward..... | 222 | 253 | 2.8 | 3.0 | 14.6 | 8.6 | 27.8 | 3.4 | 3.4 | 222. | 0.6 | 1.0 | 2.2 | 2.6 | 78.7 |
| Livermore..... | 23 | 93 | 1.0 | 1.1 | 5.7 | 2.0 | 6.3 | 0.8 | 0.8 | 211. | 0.2 | 0.3 | 0.6 | 0.6 | 71.3 |
| Oakland..... | 5,154 | 5,317 | 65.1 | 62.8 | 3.2 | 180.9 | 548.4 | 72.0 | 67.9 | 203. | 19.5 | 28.5 | 76.8 | 70.8 | 46.5 |
| Piedmont..... | 14 | 7 | 0.2 | 0.1 | -50.0 | 0.5 | 0.6 | 0.2 | 0.1 | 36. | * | * | 0.2 | 0.1 | -42.2 |
| San Leandro..... | 212 | 338 | 2.7 | 3.9 | 59.4 | 4.3 | 26.8 | 1.7 | 3.3 | 518. | 0.3 | 1.0 | 1.1 | 2.4 | 265.0 |
| Balance of County | 626 | 746 | 7.9 | 8.7 | 1.9 | 7.5 | 36.6 | 3.0 | 4.5 | 386. | 0.6 | 1.3 | 2.3 | 3.4 | 131.0 |
| Warehouses..... | -- | 17 | -- | 0.2 | -- | -- | -- | -- | -- | -- | -- | 1.2 | -- | 29.0 | -- |
| County Total..... | 7,911 | 8,554 | 100.0 | 100.0 | 8.0 | 250.8 | 808.4 | 100.0 | 100.0 | 222. | 25.4 | 40.2 | 100.0 | 100.0 | 58.8 |

* Less than 100 employees.

Source: U. S. Census of Business, Retail Trade.

Details may not add to totals due to rounding.

Table 17

NUMBER OF OUTLETS AND VOLUMES OF RECEIPTS, SELECTED SERVICE TRADES,[1] BY COUNTY, BAY REGION, 1939-1948

| County | Outlets | | | | | Receipts | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number (000) | | Per Cent of Bay Region | | Per Cent Change | Volume ($000,000) | | Per Cent of Bay Region | | Per Cent Change |
| | 1939 | 1948 | 1939 | 1948 | 1939-48 | 1939 | 1948 | 1939 | 1948 | 1939-48 |
| Alameda..... | 3.6 | 3.8 | 27.0 | 30.3 | 4.1 | 21.4 | 64.4 | 21.5 | 27.7 | 201.5 |
| Contra Costa..... | 0.4 | 0.8 | 3.2 | 6.7 | 82.9 | 1.8 | 10.2 | 1.8 | 4.4 | 464.2 |
| Marin..... | 0.3 | 0.2 | 2.2 | 1.8 | -21.0 | 1.3 | 4.1 | 1.3 | 1.8 | 205.9 |
| Napa..... | 0.2 | 0.1 | 1.1 | 1.2 | - 5.2 | 0.6 | 1.8 | 0.6 | 0.8 | 178.1 |
| San Francisco..... | 6.6 | 5.2 | 48.7 | 41.5 | -20.9 | 61.9 | 116.5 | 62.4 | 50.1 | 88.3 |
| San Mateo..... | 0.6 | 0.6 | 4.2 | 4.8 | 7.8 | 3.1 | 10.0 | 3.1 | 4.1 | 206.0 |
| Santa Clara..... | 1.1 | 1.0 | 8.1 | 8.3 | - 4.6 | 5.8 | 17.2 | 5.8 | 7.4 | 200.1 |
| Solano..... | 0.2 | 0.3 | 1.9 | 2.7 | 30.6 | 1.3 | 4.0 | 1.3 | 1.7 | 207.1 |
| Sonoma..... | 0.5 | 0.3 | 3.6 | 2.7 | -29.8 | 1.9 | 4.6 | 2.0 | 2.0 | 137.4 |
| Bay Region Total.... | 13.5 | 12.5 | 100.0 | 100.0 | - 7.2 | 99.2 | 232.4 | 100.0 | 100.0 | 134.4 |

[1]Service Trades include: shoe repair shops, barber and beauty shops, cleaning and laundry shops, auto repair shops, advertising agencies, employment agencies, blueprinting and photographic studios, etc. Custom trades and services incidental to transportation were included in the 1939 Census but were not included in the 1948 Census.

Source: U. S. Census of Business, 1939 and 1948.

Details may not add to totals due to rounding.

Table 18

NUMBER OF WHOLESALE OUTLETS AND VOLUME OF WHOLESALE SALES,
BY COUNTY, BAY REGION, 1939-1948

| County | Outlets | | | | | Sales | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number | | Per Cent of Bay Region | | Per Cent Change | Volume ($000,000) | | Per Cent of Bay Region | | Per Cent Change |
| | 1939 | 1948 | 1939 | 1948 | 1939-48 | 1939 | 1948 | 1939 | 1948 | 1939-48 |
| Alameda..... | 670 | 1,056 | 14.4 | 19.1 | 57.6 | 167.3 | 793.4 | 10.2 | 15.4 | 374.2 |
| Contra Costa..... | 72 | 129 | 1.5 | 2.3 | 79.2 | 14.5 | 72.7 | 0.9 | 1.4 | 399.8 |
| Marin..... | 42 | 42 | 0.9 | 0.8 | -- | 3.8 | 14.4 | 0.2 | 0.3 | 279.2 |
| Napa..... | 35 | 36 | 0.8 | 0.7 | 2.9 | 3.1 | 12.3 | 0.2 | 0.2 | 296.0 |
| San Francisco..... | 3,359 | 3,630 | 72.3 | 65.7 | 8.1 | 1,377.6 | 4,020.8 | 84.2 | 78.2 | 191.9 |
| San Mateo..... | 79 | 100 | 1.7 | 1.8 | 26.6 | 15.9 | 60.2 | 1.0 | 1.1 | 278.8 |
| Santa Clara..... | 187 | 267 | 4.0 | 4.8 | 42.8 | 28.9 | 117.8 | 1.8 | 2.3 | 308.1 |
| Solano..... | 55 | 133 | 1.2 | 2.4 | 41.8 | 5.0 | 6.5 | 0.3 | 0.1 | 28.9 |
| Sonoma..... | 150 | 134 | 3.2 | 2.4 | -10.7 | 19.9 | 45.1 | 1.2 | 0.9 | 126.2 |
| Bay Region Total.... | 4,649 | 5,527 | 100.0 | 100.0 | 18.9 | 1,636.1 | 5,143.2 | 100.0 | 100.0 | 214.4 |

Source: U. S. Census of Business, 1939 and 1948.

Details may not add to totals due to rounding.

Table 19

NUMBER OF EMPLOYEES BY TYPE OF ECONOMIC ACTIVITY, ALBANY AND BERKELEY, 1951

| Type of Economic Activity | Number of Employees | |
|---|---|---|
| Manufacturing: | | |
| Food | 1,600 | |
| Chemicals | 2,500 | |
| Primary Metals | 800 | |
| Fabricated Metals | 900 | |
| Machinery | 1,200 | |
| Other | 2,000 | 9,000 |
| Transportation, Communication, and Utilities | | 1,600 |
| Trade | | 8,400 |
| Finance | | 2,300 |
| Service | | 17,000 |
| Government | | 3,700 |
| Other | | 1,800 |
| Total | | 44,000 |

Source: Margaret Thal-Larsen, Area Labor Market Analyst, Area Office, State Department of Employment, San Francisco, California.

All figures are approximate.
Administrative Personnel are included in all categories.

Table 20

PROJECTIONS OF THE NUMBER OF PRODUCTION WORKERS AND OF ESTIMATED INDUSTRIAL LAND REQUIREMENTS, FOR THE NINE BAY AREA COUNTIES, 1919-1970

| County | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | Production Workers | | | Industrially Occupied Land (Acres) | Vacant Industrial Land (Acres) | Estimated Additional Ind'l Land Required (Acres) |
| | 1919 | 1949 | 1970 | 1949 | 1949 | 1970 |
| Alameda..... | 35,909 | 55,000 | 68,000 | 9,032 | 74,017 | 2,168 |
| Contra Costa..... | 13,434 | 22,000 | 27,000 | 7,790 | 48,984 | 1,810 |
| Marin..... | 583 | 400 | 300 | 634 | 3,386 | --- |
| Napa..... | 790 | 1,700 | 2,300 | 252 | 16,927 | 89 |
| San Francisco..... | 48,550 | 47,000 | 47,000 | 2,195 | 850 | --- |
| San Mateo..... | 6,837 | 7,600 | 8,400 | 3,447 | 20,828 | 303 |
| Santa Clara..... | 7,186 | 17,000 | 24,000 | 2,097 | 4,239 | 873 |
| Solano..... | 1,767 | 1,100 | 800 | 486 | 27,070 | --- |
| Sonoma..... | 1,914 | 2,700 | 3,200 | 425 | 27,940 | 83 |

Sources: (1) and (2) Bureau of the Census, Census of Manufactures, 1947 (1947 data adjusted to 1949).
(4) and (5) Robert P. Danielson, Industrial Locations in the San Francisco Bay Area.
(3) Represents a straight-line projection of 1919 and 1949 data.
(5) Includes industrially zoned lands, and tidelands and mainlands potential available for industrial development.
(6) Derives from the formula: $\left(\frac{(2)}{(4)} \cdot \frac{(3)}{X}\right) - (4)$

Table 21

ENROLLMENT IN PRINCIPAL EDUCATIONAL INSTITUTIONS IN BERKELEY AND NUMBERS OF STUDENTS COMMUTING FROM OUTSIDE BERKELEY, 1951

| Institution | Commuting from Outside Berkeley | Total Enrollment |
|---|---|---|
| University of California . . . . . | 6,240 | 15,615 |
| California School for the Deaf[1]. . . . | 4 | 415 |
| California School for the Blind[1] . . . | 3 | 163 |
| Armstrong College . . . . . | 80 | 413 |
| Berkeley Baptist Divinity School . . . | 6 | 175 |
| Church Divinity School of the Pacific | 2 | 86 |
| Pacific School of Religion . . . . . | 29 | 109 |
| Total . . . . . | 6,364 | 16,976 |

[1]Elementary and secondary schools.
Source: Administrative offices of the individual institutions.

Table 22

ORIGINS OF COMMUTING STUDENTS AT THE UNIVERSITY OF CALIFORNIA, 1947-48

| Origin | Per Cent of Enrollment |
|---|---|
| Alameda . . . . . | 1.60 |
| Albany . . . . . | 2.35 |
| Berkeley . . . . . | 61.60 |
| El Cerrito . . . . . | 1.56 |
| El Sobrante . . . . . | 0.16 |
| Hayward . . . . . | 0.16 |
| Lafayette . . . . . | 0.47 |
| Marin County . . . . . | 0.16 |
| Martinez . . . . . | 0.63 |
| Oakland . . . . . | 15.20 |
| Orinda . . . . . | 0.16 |
| Piedmont . . . . . | 0.94 |
| Pinole . . . . . | 0.16 |
| Richmond . . . . . | 7.60 |
| San Francisco . . . . . | 6.30 |
| San Leandro . . . . . | 0.16 |
| San Mateo . . . . . | 0.16 |
| San Pablo . . . . . | 0.47 |
| Walnut Creek . . . . . | 0.16 |
| Total . . . . . | 100.00 |

Source: Registrar of the University of California.
Detail does not add to total, due to rounding.

Table 23

ACREAGE IN PARKS, SUPERVISED PLAYGROUNDS, AND SCHOOL PLAYGROUNDS, BERKELEY, 1951

| Name of Facility | Acres | Name of Facility | Acres |
|---|---|---|---|
| PARKS: | | SCHOOL PLAYGROUNDS: | |
| Aquatic Park..... | 91.7 | Columbus School..... | 2.6 |
| Codornices Park..... | 10.0 | Cragmont School..... | 1.1 |
| Contra Costa Park..... | 0.2 | Emerson School..... | 0.9 |
| Civic Center Plaza..... | 2.6 | Franklin School..... | 3.8 |
| Cragmont Rock Park..... | 3.2 | Hillside Elementary..... | 1.1 |
| Frederick Park..... | 0.2 | Jefferson School..... | 1.9 |
| Fremontia Park..... | 0.6 | John Muir School..... | 2.4 |
| Great Stone Face Park.. | 0.7 | Le Conte School..... | 1.9 |
| Grotto Rock Park..... | 0.4 | Lincoln School..... | 1.1 |
| Indian Rock Park..... | 1.4 | Longfellow School..... | 2.1 |
| John Hinkel Park..... | 4.6 | Oxford School..... | 0.9 |
| Live Oak Park..... | 3.4 | Thousand Oaks School.... | 3.1 |
| Mortar Rock Park..... | 0.4 | Washington School..... | 0.8 |
| | | Whittier School..... | 2.1 |
| Total Parks..... | 119.4 | | |
| | | Burbank Junior High..... | 2.9 |
| SUPERVISED PLAYGROUNDS: | | Garfield Junior High.... | 14.4 |
| Codornices Playground.. | 1.8 | Willard Junior High..... | 1.4 |
| Glendale Playground.... | 2.2 | | |
| Grove Street Playground | 2.2 | Berkeley High School.... | 7.6 |
| James Kenny Playground. | 4.1 | | |
| Live Oak Playground.... | 1.2 | Total School | |
| San Pablo Playground... | 12.6 | Playgrounds..... | 52.1 |
| Totland..... | 0.4 | | |
| Total Playgrounds.... | 24.5 | Total Recreation Area | 196.0 |

Source: Long-Range Recreation Plan for Berkeley, California, Ronald Campbell, Planning Consultant, 1945.

Berkeley City Planning Commission, 1950-51 Land Use Inventory.

# APPENDIX E

## SOURCES

### Interviewees

ALSTRAND, Al--President, Berkeley Lions Club
ANDERSON, Robert--City Attorney's Office, City of Berkeley
BERKELEY CHAMBER OF COMMERCE
BERRY, Donald S.--Professor of Transportation Engineering, University of California
CARPENTER, Margery--Secretary City Welfare Department, City of Berkeley
CLARK, Walter P.--Association of Berkeley Improvement Clubs
CUTTER, Fred--Berkeley Yacht Club
DAVIS, Harmer E.--Professor of Civil Engineering, University of California
DEMELLO, Al--West Berkeley Improvement Club
DUGGAR, George--Senior City Planner, San Francisco City Planning Commission

FINLEY, William--Assistant Planning Director, Richmond City Planning Commission
GRIFFIN, (Mrs.) Philip--Berkeley Inter-Racial Committee
BRIGGS, James H.--City Assessor, City of Berkeley
GUTTERSON, Henry--President, Berkeley Planning and Housing Association
HALLENBECK, Harold--Department of Public Works, City of Berkeley
HANCHETT, Jean--Berkeley City Planning Commission
HAUG, Elmer--Zoning Analyst, Berkeley City Planning Commission
HEARN, Gordon--Professor of Social Welfare, University of California
HICHOCH, Beverly--Librarian, Institute of Transportation Engineering, University of California
KEILTY, James--Assistant City Planner, San Francisco City Planning Commission

LAUFENBERG, Bernard--Secretary, Berkeley Manufactures Association
LITTON, Bert--Professor of Landscape Architecture, University of California
LIVINGSTON, Lawrence, Jr.--City Planner, Oakland City Planning Commission
MADDOCK, Lucille--Berkeley City Planning Commission
MEYERS, James--Department of Public Works, City of Berkeley
MILLER, Carl C.--West Berkeley Commercial Association
MOCINE, Corwin--Director of Planning, Berkeley City Planning Commission
MULDER, Harry A.--Atchison, Topeka, and Santa Fe Railroad Company
NEIGHBOR, Howard S.--Superintendent of Building Inspection, City of Berkeley

NORTON, William--President, Berkeley Chamber of Commerce
OAKLAND CHAMBER OF COMMERCE
O'LEAR, Patrick--Electrical Inspector, City of Berkeley
SAN FRANCISCO CHAMBER OF COMMERCE
SEED, Harry B.--Assistant Professor of Civil Engineering, University of California
STANBERY, V. B.--Economic Analyst, Area Economic Development Field Service, U. S. Department of Commerce
THAL-LARSEN, Margaret--Area Labor-Analyst, Bureau of Labor Statistics
VIOLICH, Professor Francis--Department of City and Regional Planning, University of California

WILLIAMS, Professor Sydney--Department of City and Regional Planning, University of California
WILSON, Douglas--Southern Pacific Railroad
WOODWARD, Charles--City Planning Technician, Berkeley City Planning Commission
WORTH, Lucille--Berkeley City Planning Commission
WRIGHT, Vayle--City Housing Inspector, City of Berkeley

## Publications

Agle, Charles K. "A New Kind of Zoning," Architectural Forum: The Magazine of Building (July, 1951).
American Institute of Planners, Calchapter News, October, 1950.
American Public Health Association, Committee on the Hygiene of Housing, Planning the Neighborhood, Public Administration Service, 1948.
Bartholomew, Harland, Planning Consultant. Transit Facilities and Mass Transportation for Berkeley, 1947.
Bay Area Airport Planning Group, Airport Plan for the San Francisco Bay Area, July, 1949.

Bay Area Council, Guiding Bay Area Growth, May, 1950.
---- Facts About the Bay Area, Economic Series, I-3 (September 6, 1949).
Berkeley, City of. Charter of the City of Berkeley.
---- Zoning Ordinance, Ordinance No. 3018-N.S., as amended to May, 1951.
Berkeley City Planning Commission. Department of Public Works, Berkeley Takes Inventory: Parking Supply and Demand, February, 1951.
---- Planning Progress, 1950-1951.
---- Population and Economic Data, 1910-1940, July, 1949.

Berkeley Recreation Department. Berkeley Recreation Department Annual Report, 1949-50.
---- Berkeley Recreation Report.
Berkeley Veteran Volunteer Firemen's Association. Fireman's Booklet. Berkeley, 1950.
Bollens, John C. The Problem of Government in the San Francisco Bay Region. Bureau of Public Administration, University of California, 1948.
Boston Planning Board. General Plan for Boston--Preliminary Report. 1950.

California, State of. California Government Code, Chap. 334, 1951.
Campbell, Ronald L. Long Range Recreation Plan for Berkeley, California. June, 1945.
Carpenter, Margery, Department of Public Charities, Berkeley. South Berkeley, 1944.
Chamber of Commerce, Berkeley. Berkeley Industrial Directory. 1948.
---- Berkeley, The Headquarters City of the West. 1951.
Cincinnati Planning Commission. Industrial Areas, Cincinnati Master Plan Study. June, 1946.

---- The Cincinnati Metropolitan Master Plan and the Official City Plan of the City of Cincinnati, 1948.
---- Population: A Part of the Cincinnati Metropolitan Master Plan. 1949.
---- Residential Areas: A Part of the Cincinnati Metropolitan Master Plan. 1946.
Cleveland City Planning Commission. Cleveland Today and Tomorrow, General Plan of Cleveland. December, 1950.
Community Builders Council. Community Builders Handbook. Urban Land Institute, 1947.

Community Chest. Community Chest Booklet. 1951.
Danielson, Robert P. Industrial Locations in the San Francisco Bay Area. Bay Area Council, Inc., 1949.
Dayton City Plan Board. Grade Crossing Elimination--Dayton, Ohio. 1925.
De Leuw, Cather, and Company, Chicago. Report to Louisville Railroad Planning Commission. October, 1950.
Felix, Frank E. Bay Area Business in Transportation in the West, Vol. 7 (Summer, 1949).
Ferrier, William W. Berkeley, California: Story of the Evolution of a Hamlet into a City of Culture and Commerce. Berkeley: Published by Author, 1933.

Fooks, Ernest. X-Ray the City. Melbourne, Australia: The Ruskin Press, 1946.
Hall, L. Standish. Report on Area, Population, and Water Consumption of the East Bay Municipal Utility District and the Special Sewer District No. 1. September, 1945.
Hegemann, Werner. Report on a City Plan for the Municipalities of Oakland and Berkeley. 1915.
Hoover, Edgar M. Location of Economic Activity. New York: McGraw-Hill Book Company, Inc., 1948.
International City Managers Association. Action for Cities. 1950.

Liepmann, Kate K. The Journey to Work. 1945.
Mayor's Administrative Transportation Planning Council, Technical Committee of the Council. Traffic, Transit, and Thoroughfare Improvements for San Francisco. City and County of San Francisco, March, 1947.
Regional Planning Commission. Land Use Survey County of Los Angeles. July, 1940.
San Francisco City Planning Commission. Planning Monograph No. 9, The Cost of Driving to Work in San Francisco. May, 1951.
---- San Francisco Land Use Study. 1948.
San Francisco Redevelopment Agency. Diamond Heights. 1951.

Savage, John L. Report on Development of the San Francisco Bay Region. January, 1951.
Senate Fact Finding Committee. Ports of the San Francisco Bay Area. 1951 General Session of California Legislature, Senate of the State of California, 1951.
Southern Pacific Company. Adequate Transportation Must Not Result in Wasteful Duplication (April 2, 1929).
Stanbery, V. B., Chief of Technical Staff, State Reconstruction and Reemployment Committee. Estimated Range for Population Growth in California to 1960. November, 1946.

Stegmaier, J. T. The Effect of Building Space Usage on Traffic Generation and Parking Demand. 1948.
Telesis. The Next Million People. 1950.
United States Department of Commerce. Bureau of the Census. Census of Business 1948. U. S. Government Printing Office.
---- ---- Census of Manufactures 1947. U. S. Government Printing Office.
---- ---- Censuses of Population and Housing 1860-1950. U. S. Government Printing Office.

United States Department of Commerce. Bureau of Foreign and Domestic Commerce. An Outlinefor Making Surveys, Economic Series, No. 34. U. S. Government Printing Office, 1944.
---- Office of Small Business. Basic Industrial Location Factors. U. S. Government Printing Office, 1946.
University of California Alumni Association. Students at Berkeley. 1948.

## Unpublished Materials

Alfred Politz Research, Inc. The Automobile in the Daily Life of the American Population. April, 1951.
Berkeley City Planning Commission. Land Use Inventory 1951.
Cameron, Roy S. An Examination of Residential Exclusion Provisions in Zoning Districts Permitting Heavy Industry in the San Francisco Bay Area. Berkeley: June, 1951. (Thesis)
Department of City and Regional Planning, University of California. Graduate Student Study. Land Use Plan for Neighborhood #9. Berkeley, California: 1951.
---- ---- A New City at Danville. 1951.
---- ---- Prediction of Growth for Berkeley's Central Business District. 1950.
---- ---- Report on a Proposed Alternate Route to Walnut Creek. 1949.
---- ---- Shattuck and Vine Shopping Center. 1950.
---- ---- Survey and Historical Development of North Berkeley Hill District. 1951.
---- ---- Survey of the South Berkeley Area. 1951.
Dunnan, Richard C. The Adequacy of Provisions Regarding Residential Land Use in Areas Zoned for Light Industry in the San Francisco Bay Area. Berkeley: June, 1951. (Thesis)
Finley, William E. A Study of the Proposed Land Use Section of the San Francisco Master Plan. Berkeley: June, 1951. (Thesis)
Keilty, James W. The Visual Character of the City: An Analysis of the Aesthetic Elements in the Urban Landscape. Berkeley: June, 1951. (Thesis)
Murdoch, Norman. A Suggested Procedure for the Preparation of a Transit Plan for the East Bay. Berkeley: June, 1951. (Thesis)

# AN INTERIM GENERAL PLAN FOR BERKELEY, CALIFORNIA

## Proposed Land Use and Circulation Patterns

### NET RESIDENTIAL DENSITIES

PERSONS PER ACRE

- 0 TO 30
- 30 TO 50
- 50 TO 80
- 80 TO 125

### COMMERCIAL CENTERS

- CENTRAL BUSINESS DISTRICT
- INTERMEDIATE
- LOCAL

TENTATIVE SCHEME FOR TIDELAND RECLAMATION

### INDUSTRIAL AREAS

- RESTRICTED
- GENERAL

### PUBLIC SCHOOLS & RECREATION AREAS

EXISTING PROPOSED

- PRIMARY
- ELEMENTARY
- JUNIOR HIGH
- SENIOR HIGH
- PARK & RECREATION AREAS
- REGIONAL PARKS

### MAJOR THOROUGHFARES & RAPID TRANSIT

- FREEWAYS
- EXPRESSWAYS
- MAJOR THOROUGHFARES
- SECONDARY THOROUGHFARES
- RAPID TRANSIT

0 1500' 3000' 4500' 6000' 1 MILE

CERRITO CREEK
COLUSA AVE
ARLINGTON AVE
SPRUCE ST
GRIZZLY PEAK BLVD
SOLANO AVE
ALAMEDA
THE ALAMEDA
COCHRANE CREEK
CAMELLIA ST
EASTSHORE FREEWAY
SIXTH ST
HOPKINS ST
CEDAR ST
VINE ST
MARIPOSA AVE
CRAGMONT AVE
EUCLID AVE
LA LOMA AVE
SHASTA ROAD
BUENA VISTA RD
UNIVERSITY AVE
SAN PABLO AVE
SACRAMENTO EXPRESSWAY
MILVIA ST
OXFORD ST
GROVE ST
SHATTUCK AVE
UNIVERSITY OF CALIFORNIA
BANCROFT WAY
PIEDMONT AVE
DWIGHT WAY
DERBY ST
ADELINE ST
TELEGRAPH AVE
COLLEGE AVE
ASHBY AVE
BERKELEY FREEWAY
CLAREMONT BLVD
CONTRA COSTA COUNTY
EMERYVILLE
OAKLAND

University of California
Graduate Student Project
January, 1952

# ERRATA

| Page | Location | To Be Changed |
|---|---|---|
| 25 | Col. 1, Line 7 | Add "of" at end of line. |
| | Charts 1, 2, & 3 | Change "Valley" in heading of Ordinate 10 to "County". |
| 34 | Chart 4 | Add Legend as Follows: 1860:— — —  1920:—··—·· 1880:- - - - -  1940:—···—··· 1900:—·—·—  1950: (45° Line) |
| 39 | Text Table | Delete "$" in first line of figures in table. |
| 44 | Col. 1, Line 20 | Change "Forty-Fifty" to "Forty-fifth". |
| 73 | Col. 2, Line 34 | Add "the development of" in blank space. |
| 82 | Col. 1, Line 12 | Add Quotation Marks at end of paragraph. |
| 96 | Chart 7 | Add Legend as Follows: - - - - Berkeley ------- Oakland ····· Nine Bay Area Counties |
| 98 | Plate 9 | Show area just north of Solano Avenue as 30-50 Persons per net residential acre instead of 80-125. |
| 108 | Table 1 | Add to footnotes: "Table does not include area in submerged lands which have been suggested for residential development." |
| 129 | Plate 12 Plan Drawings | Add Local Commercial Center on College Ave. at city limits. |
| 145 | Plate 13 | Add note to "Non-Service Area" line in Legend: "Areas more than one-half mile from nearest elementary school." |
| 145 | Plate 13 | Add on face of map: Tilden Regional Park in area now occupied by name, "Contra Costa County". |
| 148 | Plate 14 Plan Drawings | |
| | Plan Drawings | Transpose in Legend under "Public Schools & Recreation Areas" the words, "Existing" and "Proposed". |

# INTERIM GENERAL PLAN FOR BERKELEY, CALIFORNIA

## Part II: Suggested Form for Adoption

Graduate Student Project, Department of City and Regional Planning and the School of Architecture, University of California, Berkeley, January, 1952

# PREFATORY NOTE

During the course of the past decade a large measure of agreement has been achieved among those American planning commissions which have prepared general plans concerning the essential nature of the general plan. Those which have prepared general plans in recent years--including the commissions in the cities of Boston; Chicago; Cincinnati; Cleveland; Detroit; Kansas City, Missouri; Richmond, Virginia; San Francisco; and Youngstown--manifest a common clarity of thought with respect to the objectives of the planning commission's function in urban government and with respect to the essential characteristics and the scope of the general plan by means of which the commissions are to perform their duties.

A parallel consensus has not developed, however, with respect to the documentary form of the plan. In all cases the commission does formally adopt the general plan, but the documents which are adopted manifest a wide variety of characteristics. In some cases, all of the preliminary study materials as well as the summary of the plan and the plan-drawing itself are adopted as the commission's official plan. In other cases an abbreviated outline statement of the essential objectives, principles, standards, and proposals and the plan-drawing are adopted. In still other cases a very summary brochure which contains the plan-drawing is adopted. And probably, in still other cases, only the plan-drawing is adopted.

It is the thinking of the student group, which has prepared the plan for Berkeley which is presented here, that the adopted document should comprise a complete statement of all of the proposals being made by the plan, an accurate statement of the reasoning which produced those proposals, and the drawing which describes the plan as finally constituted. It is thought that the adopted plan should not be burdened with the mass of study materials which preceded its formulation and that it should not be so summarized as to sacrifice thoroughness of exposition in favor of simplicity of presentation.

The statement which follows represents an attempt to illustrate this document form by restating the proposals and the thinking behind the Interim General Plan for Berkeley. Of necessity, the students were forced to pretend that they were the Berkeley City Planning Commission, and the language reflects this assumed role. The language has also been so phrased as to suggest that the plan has already been adopted by the Commission; although at this stage of initial publication it would first be submitted to public hearings. This phrasing is merely an administrative expediency to obviate the need for a rewriting at the time of adoption.

The statement for adoption by the Commission probably profits from being bound into a single volume with the more detailed and more technical discussions and graphic materials included in Part I. It is intended however that Part I should not be adopted by the Commission and that Part II should be capable of publication as a separate unit.

January, 1952

The Student Group

TABLE OF CONTENTS

PART II: SUGGESTED FORM FOR ADOPTION

Prefatory Note..... iii

SECTION I

1. Introduction..... 2
   The Nature of the Plan..... 2
   The Scope of the Plan..... 3

2. Berkeley as a Central Bay Area City..... 4
   The Characteristics of the Future Berkeley..... 5
   The Major Decisions of the Plan..... 5

3. The Population Holding Capacity..... 6

SECTION II

4. The University of California..... 10
   Relationship between Campus and City..... 10
   The University and the General Plan..... 11
   The University's Plans..... 12
   The Berkeley Planning Commission's Suggestions and Proposals..... 13
   Summary..... 15

5. Residential Areas..... 15
   Introduction..... 15
   The Density Pattern..... 16
   The Meaning of the Residential Proposals..... 18

6. Industrial Areas..... 19
   The Setting..... 19
   Proposals..... 19

TABLE OF CONTENTS, CONTINUED


7. Commercial Areas..... 20
   The Setting..... 20
   Proposals..... 21
   Summary..... 22

8. Recreation Areas..... 22
   Tot-Lots and Passive Recreation Areas..... 22
   Playfields..... 23
   Quasi-Recreation Areas--Viewpoints..... 23
   Multi-Purpose Parks and Playgrounds..... 23

9. Public Schools..... 23
   Elementary Schools..... 24
   Junior High Schools..... 24
   Senior High Schools..... 24

10. Motorways..... 25
   Berkeley's Existing Motorways..... 25
   Major Circulation Problems..... 26
   Proposals of the Interim General Plan..... 27

11. Public Transit..... 31
   Rapid Transit System..... 32
   Surface Transit System..... 32

12. Rail, Air and Harbor Facilities..... 32
   Rail Lines..... 32
   Airport Facilities..... 34
   Harbor Facilities..... 34

13. Tidelands Reclamation..... 34

14. Summary of the Plan..... 35

15. The Plan-Drawing..... Inside Back Cover

# SECTION I

## 1. INTRODUCTION

### The Nature of the Plan

The Interim General Plan for Berkeley is composed of two portions--the description and explanation of the plan which follows and the plan-drawing which is to be found attached to the back cover. Together, these comprise the major recommendations of the Planning Commission concerning the physical development of the City of Berkeley during the next 20 to 30 years.

The plan is a step in the Commission's program which is aimed toward the preparation of the "comprehensive, long-term, general master plan" which the City Council in 1947 directed it to prepare (Sec. 3E, Ordinance 2898-N.S.). It represents the culmination of the continuing studies which were initiated in 1947 and the specific result of the concerted efforts of the Commission and its staff during the past four months. In accordance with the City Council's directives and in accordance with the Commission's responsibilities as an advisory committee to the Council, the Interim General Plan has been adopted by the Commission, and it is recommended to the City Council as the official general guide for the physical development of the city.

The Interim General Plan is in no sense the final expression of the Commission's thinking. It represents the experience and study gained in the period 1947 to 1949 during which the Commission was assisted by Planning Consultants and the experience and study accumulated since 1949, when the first full-time professional Director and a full-time professional staff were employed. It has been prepared at the present time largely to meet the immediate and pressing need for a meaningful and intelligent basis for the revision of the residential provisions of the city's zoning ordinance and for the construction of a number of major public works. The Commission has been conducting studies which will make possible the preparation of the thorough General Plan in approximately three years. But the problems which the city government and the citizens of Berkeley must face today and in the intervening years have made it necessary that a temporary basis for decision-making be constructed at the present time. The most pressing civic problems include those associated with the guidance of residential and commercial construction and with the development of the Berkeley Freeway and the Sacramento Expressway. It is imperative that the city government guide the development of the types of buildings which are erected today, since those buildings will be a part of the city in the future. It is also important that a firm basis for the over-all patterns of the future city be established now in order that the design of the new motorways shall be such as best to serve the citizens in the future. It is equally imperative that the citizens of Berkeley be informed of the thinking and the plans of the city government, in order that they can make their wishes known and in order that they can make their own plans accordingly.

The preliminary version of the General Plan for Berkeley has now been completed. It represents the best current thinking of the citizens of the city and of the many technical experts who have

been consulted during the course of its preparation. As the studies which produced it are continued and refined, the General Plan for Berkeley will begin to take form, growing out of the framework of the Interim General Plan.

Scope of the Plan

The general plan has no legal effect upon the development of property. These legal controls will be framed in the zoning ordinance and in other city legislation which will be based on the plan. The plan is not a blueprint, since it is not possible to predict the future with definite precision; it is rather a general outline for the future which is sufficiently close to the desired goals of the citizens and sufficiently close to practical realities as to be usable as a general guide for growth. In the absence of such a guide, the unknown variables would be so numerous as to make both public and private investment highly risky. With this outline plan for the city both the city government and private investors can carry on new construction with the assurance that their investments will not be endangered by the later development of a pattern of undesirable conditions which were not predictable.

The plan makes recommendations for both public and private development. New schools, parks, streets, freeways, and other public facilities are proposed in the plan. The locations of varying types of residential development, of shopping centers, and of the industrial area are also proposed. Some of the recommendations for public works will be capable of being carried into the construction phase in the near future, perhaps within five years; others will not be realized until perhaps fifty years have passed. Since the city has grown slowly and will continue to grow slowly, gradually replacing itself as obsolete buildings are replaced by new ones, the plan will help to assure that in the course of the slow process of change all the parts are put into their proper places. And since there are many different kinds of structures comprising the city, each serving a different function from the next, the plan makes recommendations for all of them, classifying the different kinds of land-using activities into major categories. The approximate locations and sizes of these various land-using activities are shown in the plan-drawing by color masses.

Those land uses which are the responsibility of the city government will be constructed over the years in accordance with a capital improvements program, by which the expenditure of the city's revenue will be apportioned in such a way that the projects with highest priority will be built first and in such a way that all the public works will fit together to compose a functionally unified system in the future.

Those land uses which are the responsibility of private investors will be guided through the zoning ordinance, which will assure that the monetary and the intangible values of property which is already developed will be enhanced rather than depreciated by the developments which are created in the years ahead.

The Interim General Plan for Berkeley is but one stage in the Planning Commission's continuing study and planning program. It is the Planning Commission's intention that the more thorough successor to the Interim General Plan will be

completed within the next three years. In turn, it too will be subjected to continued study and discussion among the citizenry and the Planning Commission and will then be periodically revised and brought up to date. In this way the city will always have a current general plan to guide its future physical development.

The success of the city's planning program is in large measure dependent upon the degree of interest and participation which the citizens of the city can bring to it. The plan which is before you was prepared by a citizen commission and its professional staff in consultation with a large number of Berkeley citizens. It will be a successful plan only if an ever larger number of Berkeleyans can contribute their thinking to it. It is therefore the sincere wish of the Planning Commission that the citizens of Berkeley will study the Interim General Plan and will then communicate their criticisms and ideas to the Planning Commission.

## 2. BERKELEY AS A CENTRAL BAY AREA CITY

During the course of its relatively brief history Berkeley has grown to become a mature central city in a growing metropolitan region. The land area of the city has been almost completely developed by a variety of residential, commercial, industrial, institutional, and public-service structures to the point at which the city somewhat resembles many of the older urban centers of America. In many of these older cities the scarcity of available land for new construction has typically created the familiar patterns of congestion, as investors have been forced to develop the high-priced land intensively.

But it is only in the sense of being "built up" that Berkeley resembles the older cities; for Berkeley has not as yet acquired many of the associated characteristics of congestion, highly intensive development, and blight which have come to mark many cities whose land has been "built up". There is a very great certainty, however, that within the next few decades, unless the appropriate preventive measures be taken in time, Berkeley will be forced to yield to the pressures which would in turn destroy many of the physical characteristics which have induced widespread admiration for the aesthetic qualities and which symbolize the cultural, religious, educational and residential character of Berkeley.

An analysis and projection of the trends of migration, of industrial activity, of commercial activity, and of the many characteristics of the population and the economics of the Bay Area strongly indicate that the entire region will experience a significant expansion in population and in many types of economic activity within the next decades. The major locus of this expanded economic activity is to be the East Bay and specifically Alameda County, as San Francisco's industrial and commercial dominance continues to decline. Accompanying the economic movement to the East Bay and to Alameda County will occur a concomitant increase in population in the communities making up the expanded metropolitan core.

Occupying a somewhat central, although a small, portion of the East Bay urban complex, Berkeley will unquestionably be very greatly influenced by the economic expansion and by the increasing population pressures. But Berkeley's citizens can consciously regulate the effects of these natural forces which will be exerted upon it. Having

grown from a semi-rural, college town into a mature city, Berkeley is presently the center of higher education in the West; it has developed an industrial and a commercial vitality which is capable of supporting a large proportion of its inhabitants; and it has retained the essentially residential qualities which have characterized it throughout its history. In a very real sense, Berkeley is a "balanced" city. But it is in no sense an island. It is in one sense but a precinct in the larger "city" which surrounds San Francisco Bay.

The City Planning Commission is thoroughly aware of the fact that Berkeley's destiny is integrally tied to that of the entire Bay Area, and in recognition of that fact, the Commission is actively engaged in an effort to bring about the realization of a Bay Area-wide governmental planning program into which Berkeley's planning program would be integrated. But at present, and in the absence of a regional plan, it is vital that steps be immediately taken in order to assure that the desirable qualities still retained by Berkeley be protected, that those qualities which have already been lost be recovered, and that the future development of the city be so guided as to assure that Berkeley shall offer its citizens an ever better place to live, to work, and to pursue their educations. It is also important that immediate steps be taken to assure that Berkeleyans shall be afforded the widest choice possible in their selection of living places and types of accommodations, in their selection of modes of transportation, and in their selection of recreational activities and employments. It is in an effort to achieve these objectives that the Interim General Plan for Berkeley has been prepared and adopted.

The Characteristics of the Future Berkeley

The key to the achievement of these goals is the basic decision which must be made concerning the essential character of the city. Because Berkeley's land area is limited, the general plan--which indicates the kinds and locations of activities which will use that land--must represent a careful accounting of every acre in the city and of the effects of differing types of development upon that acreage, as those developments will affect the lives of the people who will live in the city in the future.

Although there are many alternatives open to Berkeley at the present time--the city could democratically choose to emphasize industrial activity, educational activity, recreational activity, etc.--it is the consensus of its citizens and their government and it is the studied conclusion of the professional city planners and the social scientists, who have given careful consideration to the future needs of Berkeley, that the city should plan to maintain its present balance of land-using activities and should protect its existing residential areas as relatively low-density living quarters.

The Major Decisions of the Plan

The City Planning Commission has conducted detailed surveys and analyses of the existing patterns of physical development in the city and it has conferred with many private citizens, with many Berkeley merchants and industrialists, with many civic groups, and with the social scientists and other specialists who have been assisting it in its deliberations. Its present recommendations to the City Council have grown out of these studies and consultations and are represented in

The Interim General Plan. Those recommendations may be summarized as follows: Berkeley should endeavor to grow with the rest of the Bay Area and to assume its necessary role as a central city in the metropolis. But in so doing it must not sacrifice the elemental attributes of livability which have attracted its present residents. The achievement of these seemingly contrasting goals will be possible only if the city government exerts a high calibre of leadership designed to temper the tendency to seek short-run gains through excessive growth by maintaining a long-run view of the consequences of excessive growth. This will mean, among other things, that Berkeley should not attempt to duplicate the regional facilities located in Oakland and San Francisco but should remain a satellite city of Oakland and San Francisco with respect to those regional facilities. But it will also mean that the amount of land devoted to industrial, commercial and educational pursuits should be cautiously but certainly expanded.

As Berkeley's industrial area expands, the city's industrial labor market will also expand. Increased provision will then be required for the housing which will then be needed by persons who will be employed in the new industrial establishments. However, in order to protect the desirable living qualities which are presented afforded by the city, every necessary step must be taken to assure that new developments of whatever type are of such nature as to contribute to rather than to deter from the healthiness of Berkeley's residential areas. This is to say that Berkeley cannot be expected any longer to absorb a proportionate increase of Bay Area population. Those outlying communities which are not as yet completely developed and new towns which might be located on the outskirts of the present urban complex can together accommodate the major portions of the expected population increase. The central cities, and Berkeley specifically, must determine now the approximate numbers of persons which the land area can healthfully accommodate. This determination is a basic function of the Interim General Plan.

## 3. THE POPULATION HOLDING CAPACITY

Approximately 114,000 persons reside in Berkeley today, including the students at the University. In an attempt to estimate the numbers of persons who will live here in the future, several public and private agencies have made population forecasts for the city based upon other estimates concerning economic activity, technological trends, past population trends, birth and death rates, etc. The forecasts have been of different technical quality, but all which have been prepared to date for Berkeley have made the elemental assumption that the city would continue to absorb as many additional residents as the "natural" forces dictate. Thus, it has been assumed that, if the population of the Bay Area should increase by one million persons within the next two decades, Berkeley would absorb her "natural share" of the one million increase.

Insofar as the forecasts could be based only upon the information which was available at the time at which they were prepared, and insofar as the city government had not previously formulated a policy with respect to population growth, the

forecasters could make no alternate assumption. This is especially true insofar as the Berkeley Zoning Ordinance presently allows for the development of a sufficient number of residential structures as to house some 900,000 persons.

But to accommodate an ever-increasing number of persons within the city limits of Berkeley is to create a condition of ever-increasing congestion. An elementary concern for the well-being of the citizenry requires that this congestion shall be avoided.

It is a long established principle of law that it is within the responsible province of local government to protect the public health, safety, and welfare through the control of the construction of residential structures. In the conduct of this public duty local governments have enacted zoning ordinances which specify that within certain areas only single family dwelling structures shall be permitted, that in certain other areas duplex-type structures shall be permitted, and that within certain other areas apartment-type structures shall be permitted. Since the numbers and types of dwelling units which are allowed to be constructed within any given city establish the maximum population which that city will accommodate, at any given time, the governments have traditionally, although seldom studiously and seldom consciously, established a population holding capacity for their cities. It remains now to recognize the implications of such a policy for the over-all physical development of the city and for the over-all life of its citizens and consciously to plan for the city's optimum population holding capacity.

In the absence of detailed studies upon which to base the zoning ordinance type of population holding capacity, cities usually hedge on the side of over estimates, and zoning ordinances usually allow for a potential population of very great magnitude. There appears to be a common mistaken notion to the effect that municipal progress is necessarily tied to population growth.

But a well integrated community must establish satisfactory relationships between the total population and the amounts of land used for industrial, commercial, recreational, educational, public service, and institutional purposes. As the population living in a city increases, increasing amounts of land must be set aside for these other activities. If the experience of most modern cities is to be taken into account and if the findings of public health, city planning, sociological, and economic studies are to be recognized, an increasing population requires increasing amounts of residential land, in order that adequate standards for open space can be realized. It is of course impossible within the established city limits of any given municipality to increase both the acreage devoted to residential use as well as the acreage devoted to the other urban activities, and a balance must therefore be reached.

The Interim General Plan for Berkeley outlines such a balance. It proposes that apopulation holding capacity of some 150,000 persons be established for the city, that population to be accommodated in a variety of residential structural types distributed throughout the various portions of the city.

# SECTION II

## 4. THE UNIVERSITY OF CALIFORNIA

### Relationship between Campus and City

There can be little question concerning the importance of the University of California in the City of Berkeley. As the initial seed which was planted some 92 years ago at Founders' Rock, the University was the basis of the initial settlement of the ranch land which grew to become Berkeley and it has remained the symbol of the city ever since. The city's founders consciously established a town whose statedpurpose was to foster higher learning, and in proclamation of this objective the city adopted the name of Bishop George Berkeley, the eminent philosopher and scholar of Britain's Eighteenth Century whose portrait adorns the official seal of the city today. Throughout the world, scholars and travelers identify the City of Berkeley and the University of California as being but a single community. Berkeley is more than the site of the University; in a very real sense it is the University and the University is Berkeley.

From its early beginnings as a small college of two buildings, 191 students, and 17 faculty members, the University has grown to become one of the largest and most important institutions of higher learning in the world. With a student enrollment approximating 20,000, academic and administrative employees approximating 4,000, and a campus occupying 400 acres within the city (946 acres in total), it is the largest and most important activity in the city.

The University is the largest single factor serving to attract new residents to Berkeley. Faculty and administrative personnel, desiring to live close to their place of work, have made their homes in the residential districts surrounding the campus. Students who originally planned to spend but a few years at the University before moving elsewhere have in large numbers found employment opportunities in Berkeley and in the neighboring Bay Area cities and many of them have chosen to establish their homes in the uniquely affable residential districts of Berkeley. And in addition to those persons who initially came to teach, work, and study at the University, many others--scholars and laymen alike--have adopted the University-City as their place of retirement.

It is probably not possible to estimate with any close degree of accuracy the percentage of the 114,000 Berkeleyans who initially came for reasons associated with the campus. But the fact that some 24,000 persons are either employed or enrolled in the University today, comprising approximately one-fifth of the city's population, suggests the scale of importance of the University. If to this figure were added the families of these persons, it is not unlikely that it would be found that the present operation of the University is responsible for one-fourth to one-third of the city's population. Of course, this can be a wide guess only, insofar as some of the students, faculty, and administrative employees live outside of Berkeley, and insofar as many of them are unmarried. But whatever the actual percentage, it is important to note that the University is the major single factor making for population growth in the city.

To these primary factors must be added the secondary effects of the University in the life of the city. As the major employer and as the

attracter of the city's residents, the University is also the major factor in the commercial life of the community, since the University people make up a very significant part of Berkeley's commercial market. And too, the University itself is a major market for the goods and services offered by Berkeley and Bay Area merchants, manufacturers, and building tradesmen.

The University's activities have a further and perhaps more profound influence upon the economic life of the city. The great wealth of technical resources which have been developed in its many research laboratories, the vast quantities of published materials which have been collected in its many libraries, and the skills and knowledge of the professional personnel who make up the University faculty have made their impress in many places. A significant number of Berkeley's industrial firms have been established here in order to avail themselves of the technical resources, the library materials, and the skills and knowledge of the University faculty. The fact that Berkeley is the site of a relatively large number of firms which are engaged in research and in the manufacture of technical instruments attests to the close relationship which exists between the economic and the academic life of the city. And the fact that some University faculty members participate in the city government and in the many citizen groups in Berkeley attests to the close relation which exists between the cultural, civic, and social life of the city and its academic life. It is clear that the Campanile does not symbolize the ivory tower; it does symbolize a close marriage between "town and gown".



The University and the General Plan

The large role which the University plays in the life of the city finds its physical expression in the physical pattern of land use. Occupying 400 acres in the very center of the Berkeley foothills, the campus extends westward to join the Central Business District, eastward into the mountainous lands behind the city, and on its east and west flanks it is fronted by a highly intensive residential development. The aesthetic qualities of the campus site have received wide appreciation, and preservation of these aesthetic qualities is presently receiving the active attention of the University administration.

The University Office of Architects and Engineers shares the responsibility for preparing and maintaining a plan for the physical development of the campus with the President's Committee on Buildings and Campus Development for the Berkeley Campus. Since the University lands are owned by an Agency of the State of California, the University, through its governing Board of Regents, is legally free to develop its tax-exempt properties in any way in which it sees fit. But because the campus is a very integral part of the City of Berkeley, it will be necessary that the University agencies and the agencies of the City of Berkeley voluntarily develop an ever closer cooperative relationship. As the result of the development of a continuing program of consultation and collaboration among the groups responsible for the physical planning of the two jurisdictions it will be possible to integrate the plans for the campus and for the city. At the present time, this relationship is informal only and exists at

the staff rather than at the policy level; but it is the Berkeley Planning Commission's hope that a closer degree of cooperation can be developed in the near future. It is understood that the University's plans are presently being revised and that they are presently in the study stage. The Commission has not officially been informed of the University's plans, and its understanding of those plans is largely based upon informal conversations at the staff level.

The city's plans are similarly in the preliminary stages, as they are expressed in the Interim General Plan. Thus final decisions on many of the separate and on many of the common problems facing the two jurisdictions have not as yet been made. However, the Planning Commission is confident that the successful resolution of the difficult questions involved can be achieved within the next few years, in ample time to design solutions which will be incorporated into the construction programs for the permanent installations.

The major problem confronting the planners in this regard is the need to provide additional building space for the expanding University. It is the official policy of the Board of Regents that the Berkeley campus is to be developed to accommodate a maximum of 20,000 students. The academic emphasis of this campus is to be upon graduate and research study, with the undergraduate enrollment limited to between 3,000 and 5,000 students. To accommodate the increasing numbers of undergraduates, the University is expanding its other campuses in order to relieve the pressure on the Berkeley campus. It is also the policy of the Board of Regents that 25 per cent of the students in attendance in Berkeley shall be accommodated in University housing.

The important implications of these policies are these: Additional space must be made available for new academic and administrative buildings. Additional space must be made available for the construction of the new residential buildings. The students attending the University will be older on the average than has been the case in the past, and a higher percentage of them will be married. The ratio of faculty personnel to students will be higher, and there will therefore be an additional number of married faculty persons intimately associated with the University. The demand for housing in the areas of the city near the University may therefore be for different kinds of dwelling structures than are presently provided. A network of traffic and parking problems will result from this combination of forces.

The University's Plans

In spite of the fact that the University owns 768 acres of land east of Gayley Road, most if not all of this land is too steep for use by academic and residential structures. And because most of the campus circulation is pedestrian in nature, the University believes, and the Planning Commission strongly concurs, that the campus expansion should occur on more level lands and in a north-south direction. Since the topographical contours run generally north-and-south, the ease of walking among the various components of the campus will be greatly facilitated by this shifting of the axis of the central campus.

The area of land which will be available for new construction in the future within the existing campus limits is insufficient. It is understood to be the objective of the campus planning agencies

to expand the campus to the portions of the city which are immediately north and south of Hearst Avenue and Bancroft Way, respectively. Academic and administrative buildings would then, presumably be constructed immediately adjacent to the present campus, and residential buildings presumably would be constructed in the area south of Bancroft Way.

The Berkeley Planning Commission's Suggestions and Proposals

The Campus. Because the topography of the area north of Hearst Avenue is very steep, because Hearst Avenue offers the best direct access to the hill area south of Cedar Street, and because this area is thought to be most capable of development for residential use, the Planning Commission tentatively suggests that the northern boundary of the University campus be retained at Hearst Avenue. There presently exists at the corner of Hearst and Euclid Avenues an important and successful shopping center which is wholly contained in the area proposed by the University for campus expansion. In addition this area contains private religious colleges, several new apartment houses, rooming houses, and fraternity houses. The expansion of the campus into this area would mean either that some of these facilities would be relocated, or that the University buildings be developed around them. The latter alternative would place the new University academic buildings outside the central campus; or, viewed differently, it would place the non-University structures within the margin of the campus.

A similar problem occurs on the southern margin of the campus, where the University facilities are presently adjacent to the Telegraph Avenue-Bancroft Way shopping center and to a large number of churches, fraternity and sorority houses, and boarding houses. This area is appreciably more level than the areas north of the campus and offers a much greater potential for campus expansion. The Planning Commission has not completed its studies of this section of the city, and its present suggestions are therefore very tentative in nature. And because the problems which are involved in campus expansion to the south have not as yet been resolved, the Interim General Plan makes no definite proposals for this area; the plan-drawing does not illustrate the Commission's suggestion for University expansion.

It is the Planning Commission's thinking at this time, however, that the area between Bancroft Way and Durant Avenue might be successfully incorporated into the central campus for academic and administrative use. Bancroft Way would then be closed as a through street, at least in the blocks adjacent to Telegraph Avenue, and Durant Avenue would then become the southern boundary of the central campus near Telegraph Avenue. The Planning Commission concurs with the suggestion that University-owned student dormitories should be constructed in the area south of Durant Avenue, intermingled with the churches and the fraternity and sorority houses, and immediately adjacent to the commercial development on Telegraph Avenue.

It must of course be recognized that this suggestion does not solve the questions associated with the active commercial development fronting on Bancroft Way and between Telegraph Avenue and Durant Way, which is here suggested for inclusion into the central campus. Nor does it answer the questions associated with the circulation problems in the expanded campus district. The solution of these issues may require a major reorganization in the Commission's thinking. The program

of study will be continued in the months ahead, and the Planning Commission is eager to discuss this entire question further with the University's representatives, with the merchants and the property-owners in the area, and with all interested citizens.

Adjacent Areas. With respect to other physical relationships between the University and the balance of the city, the Interim General Plan does make firm proposals. These proposals are described in detail in the pages below, and may be briefly summarized here.

The northern and southern flanks of the campus are proposed to be developed in high density use in the areas immediately abutting the campus and in high-medium density residential use in the areas a short distance away. These residential areas will accommodate the proposed University dormitories, fraternity and sorority houses, boarding houses, and apartment buildings.

The shopping centers located at Euclid and Hearst Avenues and on Telegraph Avenue are proposed for retention to serve the high density residential development surrounding them. Much of the traffic generated by these shopping centers is pedestrian in nature; however, it is proposed that the commercial areas be expanded so as to provide space for automobile parking adjacent to most stores. Each of the shopping centers will continue to be served by local bus transit.

The University is the major traffic generator in the city, and peak hour traffic volumes entering and leaving the campus create serious problems of traffic congestion at Oxford Street and University Avenue. The Central Business District by-pass arterial is designed to relieve this problem by providing ample right-of-way and appropriate channelization and signalization to handle the traffic flows. The present parking congestion in the area surrounding the campus may be relieved through the construction of off-campus storage buildings and through the construction of a rapid transit system which will have its main terminal at University and Shattuck Avenues, one block from the western campus boundary. A bus "feeder" system will supplement the rapid transit system and will service the campus from the city streets which define it. It is also possible that a slow-transit system may be developed to travel on-campus routes, as well. The physical proximity of the campus to Berkeley's Central Business District is a highly desirable physical link between the two communities which make up the city. Active communication between the two areas is discouraged, however, by the difficult grades which lie between the Business District and the major portions of the central campus. It is believed that the provision of adequate campus-to-downtown transit service will tend to encourage an ever-increasing degree of social interchange among the persons associated with each area.

Because the University lands east of Gayley Road are of very limited utility to the University, and because Strawberry Canyon is one of the most magnificent natural areas in the entire Bay Area, it is proposed that Strawberry Canyon be acquired from the University by the East Bay Regional Park District as an extension of the Charles Lee Tilden Regional Park and be developed as a natural recreation area for public use.

As a part of its tentative proposals concerning the tidelands reclamation, the Planning Commission suggests the possibility of the development of a portion of the tidelands as a University recreation center. With the possibility that lands might be filled as the site for the University's centennial celebration and later converted for use as an athletic, cultural, and recreational center, it is suggested that a crew course, swimming areas, club

houses, athletic fields and similar developments might be possible. As an auxiliary to this waterfront center, it is suggested that at such time as replacement becomes necessary, Memorial Stadium be rebuilt on the waterfront adjacent to Golden Gate Fields, whose parking areas could be shared during the separate seasons. In accordance with present University thinking, it is anticipated that intramural athletic fields and other recreational facilities will be developed in the area to be devoted to University dormitory development.

Summary

Because the University of California and the City of Berkeley are members of the same family, occupying the same home, so to speak, and because the livelihood of each is dependent upon the welfare of the other, it is of extreme importance that the plans made by the city and the plans made by the University are in essential agreement and serve to further the separate and hence mutual advantage of both members. Both the city and the University are confronted with physical developmental problems and potential physical needs, and a continuing effort will be made to achieve the solutions which will create a kind of physical organization which will enhance the environments of both members of the community and which will recognize the important role which the University plays in the economic, civic, cultural, and educational life of Berkeley.



## 5. RESIDENTIAL AREAS

Introduction

Berkeley is a city whose residential development is predominantly of single-family homes. Approximately 47 per cent of the land area of Berkeley has been developed for residential use in buildings which accommodate from one to as many as fifty households, but approximately 75 per cent of the residential land is used for single-family dwellings. Only 1.4 per cent of the residential land is used for apartments accommodating more than ten households.

Berkeley's residential areas are also characterized by a quality of architecture which is known throughout the world for its honesty of design and for its aesthetic attributes. There is no "Berkeley style" and hence no residential monotony. Rather does the variety of architectural forms, each reflecting its own period of construction and its own terrain, create a living environment which is varied and yet unified.

This varied single-family residential development has been the consequence of the slow process of growth which for years was suburban in nature. Berkeley's homes were largely constructed singly, only a few subdivisions of relatively small size having been constructed by any one builder. And because Berkeley was suburban to the central city for the greater part of its history, the pressures for multiple-family structures were slight. It is only in the area adjoining the University and the Central Business District that any large scale, high density construction has taken place.

The existing population density pattern in the city may be taken as the barometer of the citizens' activities. The Interim General Plan takes it as a barometer for the guidance of future density patterns as well. In the plan's proposals, which are described below and which are illustrated in the plan drawing by yellow color masses of varying shades, a city-wide pattern of population densities is integrated into the city-wide pattern of other land uses and of the various circulation media. The density plan has grown out of the existing patterns of population densities, and it reflects the anticipated patterns of activity of Berkeleyans in the future.

The Density Pattern

The Interim General Plan proposes that all lands east of San Pablo Avenue with the exception of the Central Business District, the University and its appurtenances, parks, public open spaces, and shopping centers be reserved for residential use. Also to be set aside exclusively for residential use are those lands west of San Pablo but east of Sixth Street, between Dwight Way and the Albany line with the exception of a small area bounded by the Albany line, Sixth Street, Eighth Street, and Camelia Street. This land is a portion of the proposed industrial area.

It is proposed that the areas so described be developed within four ranges of population density:

| Density Range | Persons per Net Residential Acre |
|---|---|
| Low Density..... | 1 to 30 |
| Low-Medium Density..... | 31 to 50 |
| High-Medium Density..... | 51 to 80 |
| High Density..... | 80 to 125 |

High Density Areas. High density residential development is proposed for the area contiguous to the northern limits of the University campus and the Central Business District and that area lying coincident with the southern boundary of the campus, south to Dwight Way, and abutting the Central Business District to the west.

These areas will provide for a greater proportion of small, low-maintenance units within easy access to the major cultural and commercial facilities of the city, the major transportation routes, and the rapid transit system. It is anticipated that this area of intensive use will be attractive to home-seekers within the older age groups and to white-collar commuters as well as to single students and to childless student-couples seeking temporary quarters during their stay at the University. University housing facilities for students, such as dormitories and boarding houses, will also be accommodated within these areas.

High-Medium Density Areas. It is proposed that an almost continuous band of high-medium density use form a "horseshoe" around the University, the Central Business District, the Civic Center, the high school and the high density areas. This horseshoe is transformed into a Y by a further band of high-medium density use extending westward on either side of University Avenue to a point west of San Pablo Avenue. The city-wide pattern of this area makes full utilization of the main routes of travel, both intra-city and inter-city. It brings a large proportion of the population within direct access of the principal shopping centers, the Civic Center, and the Central Business District. It is assumed that this area and the other high-medium density areas

mentioned below will provide a large percentage of the dwelling accommodations of working couples, single men and women, couples within older age groups, and retired persons.

Other areas of high-medium density are proposed in the general vicinity of the Berkeley Freeway and San Pablo Avenue; in the area south of the Berkeley Freeway between the Sacramento Expressway and Shattuck Avenue; and in the general vicinity of Gilman Street and San Pablo Avenue.

This proposal suggests the reclamation of large segments of ribbon commercial development for residential use of the high-medium residential type. It is supposed that the proposed residential density would permit sufficiently intensive development of the land to make the reversion of these commercial areas to residential use financially practical. Studies of existing land use in the ribbon commercial areas show evidence of marginal commercial operation, many vacant parcels of land, and a nucleus of multi-family residential structures.

Low-Medium Density Areas. It is proposed that a low-medium density area extend out from the Y-shaped high-medium area and surround the other high-medium areas. This area is to cover almost all of the remaining level lands of Berkeley with the exception of a small portion of the low density area meandering in from the hills. This intruding low density area occurs in the vicinity of the Sacramento Expressway and Hopkins Street.

Another small piece of land proposed for low-medium density is that which is located between the northern limit of the California School for the Deaf and that portion of the present University campus lying east of the stadium, which the plan recommends be annexed to Tilden Park.

Other small low-medium areas are proposed in the Thousand Oaks-Solano Avenue area; the Euclid-Avenue-Keith Avenue area; and the areas contiguous to the high density and high-medium density areas north of the University in the vicinity of La Loma Avenue.

The Euclid Avenue-Keith Avenue areas and the La Loma Avenue area are located in the Berkeley Hills. The desirability of relatively high density development in the hills has been under discussion among Berkeley citizens for some time. It is thought that the quality of the area and the attractiveness of the view are such as to warrant their being accessible to persons unable to buy or rent a single-family home. The major deterrent to multiple-unit development in the hilly areas is, of course, the increased traffic volumes which would be generated on the narrow, winding streets. However, because both Euclid Avenue and Keith Avenue are to be developed as major streets, they will be able to handle the increased traffic load.

Low Density Areas. With the exception of the small hill areas of low-medium density, mentioned above, it is proposed that the entire hill section in the northeast portion of the city be developed in low density residential use.

A second section proposed for low density use occurs in the general vicinity of Claremont Avenue and Ashby Avenue.

The first area is of very hilly and rugged terrain. The streets follow the contours and, of necessity, are narrow. Residential use of high density in this area would create circulation and vehicle storage problems. The area is presently developed almost entirely in single-family structures of high quality.

The Claremont district at the present time is developed in very large single-family homes of the highest quality. The existing density of that portion of the Claremont district west of Claremont Avenue is the lowest in the city.

The Meaning of the Residential Proposals

In general, the Interim Plan envisages that residential development will continue to be of relatively low intensity. The largest portion of the city is to be developed in low or low-medium density use, but an appreciable portion is to be developed in high or high-medium density use. It is proposed that the density pattern which is recommended will provide living accommodations of good standards for a large variety of population groups. The location of the higher density areas will facilitate access to both surface and rapid transit lines and will facilitate access to the major centers of employment and cultural activity. The net balance of the plan is to maintain the home-town residential character of Berkeley while at the same time giving due recognition to the fact of the city's maturation as a central city of the metropolitan area.

The city's largest single activity, the University, is continued as the residential focus of the city. The developing industrial area is recognized as a secondary focus. The satellite relationship of Berkeley to San Francisco and Oakland is recognized by the provision of high density developments along the major routes to these two centers.

But the major recommendation of the plan is that a holding capacity for the city be established and maintained. It is proposed that no more than 150,000 persons shall live in Berkeley in the foreseeable future. This represents a 32 per cent increase over the 1950 population and the plan proposes to accommodate this many persons comfortably and wholesomely by the proper provision of public and private services. Moreover, it proposes to accommodate this potention population increase without greatly altering the existing density pattern and by absorbing the new residents throughout a large percentage of the city's area.

The density patterns which will eventuate from the plan are to be a reflection of a heterogeneous admixture of building types. Thus, where low density areas have traditionally comprised only single-family residential structures, it is proposed that duplex, small multiple-unit structures, and even apartment houses shall be allowed, providing that appropriate standards of open space be observed. In accordance with the program which is envisioned the zoning ordinance which would effectuate this plan would allow a builder to construct any type of residential structure in any area of the city provided that the lot is sufficiently large as to yield a lot-density which is not in excess of the density proposed for the specific district. In this manner, persons of all incomes and families of all ages and sizes would be accorded the widest range of choice with respect to the area of the city in which they may choose to live.

The net effect of the plan, then, can be to help to assure that Berkeley shall remain a city of homes while at the same time taking its proper place in the metropolitan core. It can achieve these ends without the typical overcrowding usually associated with central cities; it can achieve these ends without sacrificing the economic and cultural attributes which mark Berkeley today. Moreover, it can retain its role as the home of a true cross-section of the Bay Area's cosmopolitan population.

## 6. INDUSTRIAL AREAS

### The Setting

At the present time some 200 industrial firms have established factories occupying approximately 276 acres of land within Berkeley. These factories employ well over 6,000 persons, many of whom are Berkeley residents and contribute a major portion of the tax revenue of the city. Berkeley's industrial activity is certainly a major factor in the economic life of the city.

Most of the industrially developed land exists in the area west of San Pablo Avenue along the Southern Pacific Company's main-line trackage. In this area the objectionable characteristics of industrial activity are physically removed from most of the residential areas of the city, and they are efficiently located for easy access to the major highways, ports, and railroad lines. In the future, the scale of industrial activity in Berkeley will increase, as the entire Bay Area becomes an ever greater industrial center. This added industrial activity is much to be desired, so long as the types, sizes, and sites of the new factories are in conformance with the desired characteristics of Berkeley itself. The Planning Commission is confident that with adequate guidance and with the provision of adequate service to new industrialists, the industrial area of Berkeley can continue to expand, to prosper, and to enhance the economic life of the community.

### Proposals

The Interim General Plan proposes that the lands which are located in the area east of the Eastshore Freeway and west of Sixth Street plus the section between Sixth Street, Eighth Street, Camelia Street and the northern city limit, and plus the section between Sixth Street, San Pablo Avenue, Dwight Way, and the southern city limit be reserved exclusively for industrial use. In addition it proposes that it may be feasible for some portions of the tidelands to be filled and given over to industrial use, preferably those portions which are south of the existing fishing pier and adjacent to the southern city limit which borders on the City of Emeryville. But, whether or not industrial development is to occur on the tidelands, the plan proposes that there be but one integrated, adequately serviced industrial district in the City of Berkeley.

Because the land in the proposed industrial area is best suited for industrial purposes, it is recommended that other types of uses be excluded from that area and be located instead in those various areas which are best suited to their respective needs. In this way sites which are presently occupied by non-industrial uses will become available to new firms desiring to locate factories in

Berkeley and to existing firms desiring to expand their plants, as the existing residential and commercial structures become obsolete and are demolished. And in this way, too, industrial activity will not be hampered by the non-industrial nuisances which presently are scattered throughout the industrial area.

In a like manner, industrial firms which are presently located in other sections of the city will be able to find sites in the industrial district where they may be closer to the main lines of transportation and to their sources of supply and service and they will, in turn, cease to be nuisances in residential and commercial areas of the city.

The plan proposes in addition that those margins of the industrial area which are adjacent to residential areas should be under certain restrictions with respect to building heights, coverage ratios, noise, smoke, glare, and vibration generation, and that they be required to maintain a certain minimum quality of landscaping about their plants. Those sections of the proposed industrial area which are farthest removed from residential developments should have fewer restrictions. The plan proposes that all firms within the industrial area should be required to provide adequate off-street parking areas to meet the parking needs of their employees and off-street loading areas to meet the needs of their own shipping operations. In this way, the streets within the area will be better able to handle the truck and automobile traffic which an industrial district generates.

Should a portion of the tidelands be filled and be made available for industrial development, it is proposed that portions of the filled land be also made available for recreational and residential purposes. And if recreational facilities be developed which are at least equal in quality and recreational utility to the present Aquatic Park, it is then recommended that the Aquatic Park may also be filled and developed in industrial use, if this is necessary in order to accomplish the following proposals: (1) that no industrial development occur in the area which is west of the Eastshore Freeway and north of the present fishing pier, and (2) that the Santa Fe Railway tracks be consolidated with those of the Southern Pacific Company, at least in that portion of the city which is north of the line described by University Avenue.

## 7. COMMERCIAL AREAS

### The Setting

The large majority of Berkeley's commercial firms are engaged in retail businesses, there being but a negligible amount of wholesale activity in the city. These retail firms have distributed their stores throughout the city in shopping centers of three major types: the local shopping centers which are located in residential areas and which serve the day-to-day needs of the residents, the intermediate type shopping centers which are located at the junctions of the major streets and which serve the longer run needs of the residents in the adjacent areas, and the Central Business District which contains the major offices, banks, department stores, and specialized retail shops. In addition, there are a number of stores which

are not directly associated with a shopping center but which are located in commercial strips along the major avenues. Together these firms furnish the major portions of the goods and services which Berkeleyans buy. The balance is purchased in the Metropolitan Business Districts of San Francisco and Oakland.

Berkeley's firms have developed approximately 200 acres of the city's land for various types of commercial use. Since this development will need to be expanded in the future, the Interim General Plan reserves a total of approximately 300 acres for commercial use and parking space associated with such use to meet the needs of the population within the next twenty years. No attempt has been made in the formulation of the Interim General Plan to determine the specific size of the various districts; sufficient study has not yet been conducted concerning the relationship between income and the amount of commercial land necessary to serve that income, concerning the shopping habit patterns of the citizens of Berkeley, etc. It is possible at this stage, however, to make preliminary recommendations concerning the general scale and location of commercial development throughout the city.

Proposals

The Interim Plan proposes that the general size, shape, and location of the existing Central Business District be retained while unifying the District with the Civic Center and with the University of California. Further studies should be directed toward the reorganization of the land uses in the Central District along more functional lines, which will make possible the more efficient use of the existing space and which will recognize both the patterns of consumer purchasing activities and the patterns of pick-up and delivery of goods. It is not intended that the Berkeley Central Business District shall attempt to perform the functions of a metropolitan retail district. The central business districts of Oakland and San Francisco will undoubtedly continue as the twin cores of commercial concentration in the Bay Area, and the Berkeley District should therefore continue to serve as a local "downtown" center serving the citizens of Berkeley and a relatively small percentage of citizens from neighboring communities. For those who prefer to live in the Central District, the plan proposes that residential accommodations for approximately 2,000 persons should be retained.

The Interim General Plan also proposes eight intermediate districts. These are to be located in the vicintiy of existing focal points of commercial activity and are as follows: Ashby and College; the area between Channing Way and Bancroft Way on Telegraph Avenue; the area between Channing Way and Dwight Way on Shattuck Avenue; the area between Fairview Street and Alcatraz Avenue on Adeline Street; University and San Pablo Avenues; Dwight Way and San Pablo Avenue; the area between Rose and Vine Streets on Shattuck Avenue; and the area between Modoc Street and The Alameda on Solano Avenue.

It is also proposed that the existing strip commercial development in the city be gradually reduced and the existing establishments be relocated in more compact groupings in the vicinity of the focal areas listed above.

The proposed local shopping centers are too numerous to mention here. The existing centers are

in large part retained. In addition, four new local shopping centers are proposed for the North Berkeley Hill area. With the accumulation of more detailed data relating to shopping habit patterns and income groupings, more precise locations and sizes for these local centers will be determined in the General Plan for Berkeley.

Summary

In brief, the Interim General Plan makes only tentative recommendations with respect to the development of commercial areas within the city. It proposes that the Central Business District and the seven existing intermediate districts be retained in the locations of their existing nuclei. One local shopping center located at San Pablo Avenue and Dwight Way is recommended for expansion to the intermediate district level. The many local shopping centers are recommended for retention in their present locations. In all cases, and whenever feasible, it is proposed that the strip developments be contracted and that the various centers be encouraged to develop as more centralized concentrations of shops with ancillary parking spaces. The plan-drawing which illustrates these proposals indicates with red circles only the relative sizes of the various centers and their approximate nuclei. More detailed proposals must wait upon the intensive studies which would follow in the course of preparation of the General Plan for Berkeley.

## 8. RECREATION AREAS

A serious deficiency of open, recreational space exists in Berkeley at the present time. Whereas recreation authorities recommend that a city of Berkeley's size should provide a minimum of three acres of recreation space per thousand persons, Berkeley now maintains only 1.7 acres per thousand. This indicates an absolute deficiency of approximately 150 acres as the minimum additional space that is required at the present time. With a growth of population the need will be still greater. In part the shortage is compensated for by the proximity of the regional park system beyond the Berkeley Hills, but the need for play space for children throughout the residential areas is still real and pressing.

In order that Berkeley's anticipated 150,000 citizens shall be provided with a sufficiency of play space in the future, the Interim General Plan proposes that approximately 478 acres of land be reserved for recreational purposes. Including the Aquatic Park, the city presently maintains some 196 acres of recreational lands. Thus approximately 285 additional acres are proposed for development. The proposal amounts to providing approximately three acres of recreational space per one thousand persons in the future.

Specifically, it is proposed that three types of recreation areas be provided, together with what may be considered a quasi-recreation area. These areas may be described as follows:

Tot-Lots and Passive Recreation Areas

These areas vary in size from about 5,000 square feet to 15,000 square feet. Their primary function is to provide recreation space and facilities for children of the approximate age-range of six to nine years and passive recreation areas for the older members of the population. Since it is

desirable to have these areas closer to places of residence, they will be more numerous than the other recreation spaces in the city. The standard maximum distance that citizens will have to walk in going from their places of residence to these areas is one-fourth mile, or two long blocks.

Playfields

These areas vary in size from approximately one-half acre to four acres. Their primary function is to provide space for the more active forms of recreation desired by persons nine years of age and above. It is proposed that a playfield be provided within three-fourths of a mile from each place of residence, or about six long blocks.

Quasi-Recreation Areas--Viewpoints

Certain parts of Berkeley offer magnificent panoramic views of the Bay Region. These views are particularly striking from the hill areas of the city. Since the hill areas were originally subdivided, the number of open spaces usable for views of the Bay has gradually declined with the advancing residential construction. It is proposed that a number of existing spaces be maintained along various streets in the hill areas for the purpose of preserving views of the Bay for the general public.

Multi-Purpose Parks and Playgrounds

These areas vary in size with different areas of the city. They should be designed to provide recreation facilities for all age groups within one mile of each place of residence.

Included are three major natural areas of Berkeley. It is proposed that Codornices Creek be developed from Bonita Street east to Codornices Park in a strip approximately 200 feet wide; this will not only unify Live Oak Park with Codornices Park but will also provide excellent places for picnicking and walking along the banks of Codornices Creek. It is further proposed that Codornices Creek and Cerrito Creek be developed in a similar manner where the creeks form the political boundaries of the city and that Strawberry Canyon be developed for public recreational use. Specifically, in order to make full use of Strawberry Canyon, it will be necessary, among other things, to improve the means of access both by foot and by auto to different parts of the area, to renovate Strawberry Pool, and to destroy the poisonous foliage which exists in considerable quantity in the canyon.

## 9. PUBLIC SCHOOLS

Berkeley's outstanding function in the Bay Area metropolis is that of an educational center. As the site of the University, of several major religious colleges, and of the California Schools for the Blind and for the Deaf, Berkeley has acquired a world-wide reputation of scholarship.

Of perhaps less wide renown is the reputation which the Berkeley Public School System has developed. Comprising fourteen elementary schools, one primary school, three junior high schools, and one high school, the system has traditionally and successfully endeavored to maintain educational standards of the highest calibre. The Berkeley Unified School District is presently engaged in the construction of new and expanded school plants

throughout the city in accordance with the best modern school standards. Upon the completion of the present construction program, Berkeley's children will be provided with physical facilities of which any city might well be proud. However, there will still be areas of the city which will not be adequately served because the schools will not be sufficiently close to the children's homes as to allow them to walk to school easily. And, too, as the present large number of pre-school-age children mature and pass through the school system and as the city's population increases, the physical plants will become over-taxed.

Elementary Schools

The Interim General Plan therefore proposes that three new elementary schools be constructed in order to meet the needs of the population in Berkeley within the next generation. One of these should be located in the general vicinity of Allston Way and Acton Street, and the present site of the Berkeley Corporation Yard may be made available for this purpose. The location of this school is designed to serve an area presently outside the existing one-half mile standard walking distance. It will also serve to relieve future congestion in the elementary schools which surround it. The plan also proposes that another school be located near Campus and Avenida Drives and Olympus Avenue. The location of this school is designed to serve an area which is also outside the present one-half mile standard and to relieve congestion at Hillside Elementary School. Another elementary school is proposed near Spruce Street and Michigan Avenue. A school at this location will also serve an area which is at present inadequately served. A possible site is available at this location, the development of which will involve the realignment of Spruce Street, the filling of a deep ravine, and a joint use of the site which is also planned for use as a municipal playground facility.

An additional area which is presently outside the one-half mile standard is in the northwestern section of the city in the vicinity of Codornices Village. The Interim General Plan proposes that, at such time in the future as adequate housing is available for the present residents of the Village, the land occupied by the Village will be cleared and developed for industrial purposes; this will eliminate the need for providing additional facilities for a major portion of the inadequately served area. The remainder of the latter area will be too small to warrant expenditures for new school facilities.

Junior High Schools

The plan further proposes that the existing junior high school plants be expanded to accommodate anticipated increases in enrollment. Willard and Burbank Junior High Schools will probably require the greatest share of additional facilities in view of the fact that the greatest share of anticipated population increases will occur in their service areas. The additional space requirements of each of these facilities must be determined after the completion of a detailed analysis of the capacities of existing facilities and an estimation of future age composition patterns in various sections of the city.

The High School

As the population of Berkeley approaches the population holding capacity proposed in the Interim General Plan and as the large number of postwar children reach high school age, enrollment in

Berkeley's senior high school might well increase to about 3,000 and additional facilities will be needed. Two alternatives present themselves: either the existing facilities can be expanded by acquiring more land on the periphery of the present site, or a new site can be selected and an entirely new high school constructed. It seems generally unwise to increase the congestion and the attendant hazards in and around the Central Business District by accommodating the anticipated enrollment increases by expanding the facilities at the existing site. Therefore, it is is proposed that an entirely new site be selected and another high school constructed which may allow for the reduction in student enrollment at the existing high school and which will accommodate the increases in student enrollment which can be anticipated with an increase in the over-all population of the city. It is proposed that the city be divided generally into eastern and western high school districts and that the new high school be located somewhere between the Sacramento Expressway and San Pablo Avenue. In this manner the new high school will be able to serve not only the general area between the Sacramento Expressway and the Eastshore Freeway, but also such residential development as occurs on the tidelands. Moreover, the heavy investment in the existing high school can be protected and the school can continue to serve that section of the city which will be east of the proposed Sacramento Expressway.



## 10. MOTORWAYS

### Berkeley's Existing Motorways

The basic patterns of Berkeley's street system were determined at an early date by the radial highways which extended from Oakland. Upon reaching the central portion of Berkeley, the highways were topographically forced into a north-south direction, thus forming a system of longitudinal major thoroughfares paralleling the Berkeley Hills. With the exception of the highway which became San Pablo Avenue, each of the thoroughfares ends within Berkeley where it confronts the foothills or meets the University campus. As the consequence, but little through-city traffic enters Berkeley, most of it being encouraged to travel around the city at the waterfront.

The grid streets which were laid in the areas between the thoroughfares were plaitted over a comparatively long period of time, each subdivider attempting to orient his grid toward the nearest major street. The consequence has been that the axis of the grids of adjacent subdivisions lie at right angles to each other, thus creating frequent three-street intersections which have in turn encouraged the use of the major streets.

For many years Berkeley was without any major east-west thoroughfares, and it was really not until the opening of the Bay Bridge and the Broadway Tunnel that University Avenue and Ashby Avenue developed to their current proportions.

But although some of Berkeley's thoroughfares are clearly delineated and although some of the interior grid streets discourage through traffic

use, this is not always the case. Little distinction exists, for example, among the various types of thoroughfares as they relate to the nature of the vehicular use to which they are put. Some major or secondary thoroughfares are identical in width to local, residential streets, in spite of the wide differential in traffic volumes which may occur. And, at the other extreme, some major streets are too wide to allow for their efficient use.

At a much smaller scale, Berkeley is today confronted with the same problems as those faced by the Bay Area as a whole. The problem is one of providing facilities sufficient to serve the increasing numbers of rubber-tired vehicles through the adaptation of a system of streets which was designed to serve a relatively small number of horse-drawn vehicles. In some cases the existing thoroughfares can be adapted with relative ease. But in those cases where the volumes of traffic are great, where the existing street pattern is not readily adaptable to the directions of movement of contemporary motorists, and where important land use considerations dictate, it will be necessary to provide new motorways. In addition it will be necessary to develop more and better facilities for the parking of those vehicles when they reach their points of destination.

Major Circulation Problems

The existing complex of Berkeley's major circulation problems may be summarized in terms of the specific deficiencies, as follows:

1. The lack of an adequate connection serving regional traffic between the Eastshore Highway and the residential areas east of Berkeley. Combined through and local traffic seriously complicate circulation on Ashby Avenue and on intersecting vehicular carriers within the city.

2. The presence of major conflicts on University Avenue arising from its use both as a business street and as a major, central east-west artery.

3. The absence of a central north-south intercity route free from local traffic generators.

4. The need for an adequate connection between residential areas north and south of the University of California campus.

5. The need for a through, direct connection from the North Berkeley Hills residential area to shopping facilities on Solano Avenue and to the Eastshore Highway.

6. The lack of convenient access to Charles Lee Tilden Regional Park east of the city.

7. The lack of separation of local traffic from industrial traffic generated by the Radiation Laboratory installation in the upper part of the University of California campus.

8. The mixture of through and local traffic in the vicinity of the Berkeley Central Business District.

9. The insufficiency of off-street parking facilities within traffic-generating areas, such as the Central Business District, the Civic

Center area, the University of California campus, the high-density residential areas north and south of the University, and the many smaller shopping areas throughout the city.

Proposals of the Interim General Plan

Regional Routes. A number of proposals of the Interim General Plan are regional in character, or at least partly so. The first of these concerns the completion of the process of converting the present Eastshore Highway into a full, grade-separated freeway. This is not a new proposal, being a part of the program of the State Division of Highways for freeways throughout the Bay Area. In fact, work has already been started on the construction of a grade separation structure at the intersection of Powell Street and the Eastshore Highway in Emeryville. Similar interchanges at Ashby Avenue, University Avenue, and Gilman Street in Berkeley are necessary before this regional route will meet freeway standards.

The plan also proposes the construction of the Berkeley Freeway, connecting the Eastshore Freeway, and thus Richmond and San Francisco, with the upper East Oakland, Orinda, Lafayette, and Walnut Creek areas. The need for such a high-speed, high-capacity vehicular carrier was determined by the State Division of Highways in 1945. To date no final alignment for the Berkeley Freeway, as studied by the State Division of Highways and the Berkeley Department of Public Works, has been determined, although several schemes are under study at the time of this writing. The Interim General Plan for Berkeley proposes an alignment which closely follows the south city limit of Berkeley and connects with the extension of Broadway in Oakland. This location is considered to make the best use of existing possibilities in connecting the Eastshore Freeway with the Broadway Low-Level Tunnel while disrupting to the least possible extent the existing service areas of schools, parks, playgrounds, and shopping centers in the surrounding portions of the city. Careful consideration has been given to problems created by dividing closely knit residential areas with a freeway right-of-way and to problems of land values and topography.

In addition the plan proposes the construction of the Sacramento Expressway, a central north-south, limited-access route following the line of the present Sacramento Street but connecting with Key Route Boulevard in Albany on the north. This route will handle other than regional traffic but will be an essential connection between Oakland and the residential areas north of Berkeley.

The plan proposes that an extension of the projected Grove Street Freeway in Oakland be carried north to a juncture with the east-west Berkeley Freeway. From the interchange at the intersection of the two freeways a surface route is provided north via Adeline Street to Grove Street, Shattuck Avenue, and (via a new street) to Fulton Street. Both Grove and Fulton Streets are major by-passes for the Berkeley Central Business District.

The improvement of Oxford and Spruce Streets into a major north-south artery will handle a certain proportion of regional traffic to and from the Charles Lee Tilden Regional Park, as well as other traffic whose origins or destinations are in the North Berkeley Hills residential areas. It is not the intention of the plan that this street be the

primary entrance to the Regional Park, since it is not desirable to funnel such traffic through the hill living areas. It is suggested, rather, that other major routes serving the Regional Park System be developed, particularly from Richmond and Wildcat Canyon and from the east portal of the Broadway Low-Level Tunnel.

Major Thoroughfares. The Grove Street Freeway, proposed in the Oakland Major Streets and Highways Plan, is recommended, as mentioned above, for extension into Berkeley, forming a grade-separated interchange with the Berkeley Freeway and continuing northward as a major street to connect with the Berkeley Central Business District.

The plan proposes that two major by-passes be constructed on the west and east of the Berkeley Central Business District. It is proposed that Grove Street be developed to carry traffic west of the Business District to and from the North Berkeley Hills via Monterey-Arlington Avenue connections. And it is proposed that Fulton, Oxford, and Spruce Streets be developed to form an east by-pass serving the University of California, the high-density residential areas north of the campus, and the residential areas in the North Berkeley Hills. The by-pass route will make possible the closing of Shattuck Avenue to automotive traffic and the development of a pedestrian plaza in the heart of the Business District.

Telegraph Avenue is proposed as a major street, crossing the Berkeley Freeway at a grade-separated interchange and moving traffic between Oakland and the University and high-density residential areas south of the campus.

Claremont Avenue is proposed for development as a major street connecting the southeast residential portions of Berkeley with Oakland.

A thoroughfare of major street standards is proposed for the foothill area along the Piedmont Avenue-Gayley Road right-of-way between the present Tunnel Road on the south and La Loma Avenue and Cedar Street on the north. This route will provide an adequate cross-campus connection between the residential areas both north and south of the University of California. Both Euclid and La Loma Avenues on the north will serve as important secondary collector streets for the North Berkeley Hills residential area.

San Pablo Avenue is proposed as a major street, with improved channelization at important intersections and careful treatment of the parking and commercial areas so as to improve the traffic-carrying capacity of the street. San Pablo Avenue will continue to serve as a major collector of traffic for the West Berkeley residential areas.

Sixth and Seventh Streets, connected to one another at Dwight Way, will serve as a major street providing access to the residential and industrial areas to the west of San Pablo Avenue. This route extends from the Berkeley-Albany line on the north to Ashby Avenue on the south, connecting with an Emeryville industrial route at its southern extremity and for the largest part of its length providing a line of demarcation between the residential areas to the east of Sixth Street and the industrial section to the west.

University Avenue is proposed as a major street, with proper treatment of parking and intersection

problems which today impair the use of this principal approach to the Berkeley Central Business District and the University of California.

The Sacramento Expressway will serve not only as a means of carrying traffic north and south across Berkeley, as was mentioned earlier, but also as a collector and distributor of traffic from and to all central areas of the city.

The Interim General Plan for Berkeley recommends the development of Solano Avenue as a major street, connecting with the north-south Alameda-Grove Street route by means of a by-pass to the south and west of the Solano Avenue shopping center. This route will provide a suitable connection from the North Berkeley Hill residential areas and the Central Business District to the cities of Albany, El Cerrito, and Richmond; to the west in Albany it is assumed that Solano Avenue will be connected with the extension of the Sacramento Expressway (Key Route Boulevard), with San Pablo Avenue, and with the Eastshore Freeway.

As noted above, Arlington Avenue, as a major street, will connect with the north-south Alameda-Grove Street route via Monterey Avenue. The Kensington residential areas will be served by this route.

In addition to the by-pass route around the Central Business District, a ring-road is proposed which would be designed to carry local traffic around the central shopping and office quarters of the Business District. It consists of Milvia Street on the west, Bancroft Way on the south, Fulton and Oxford Streets on the east (here doubling with the major east by-pass), and Hearst Avenue on the north. This "inner-circle" route is essential to the orderly reorganization of the Central Business District.

The Interim General Plan proposes three major streets carrying local traffic east and west within the city boundaries. Two of these, Dwight Way and Cedar Street, extend from Piedmont Avenue and La Loma Avenue, respectively, to Sixth Street and San Pablo Avenue, respectively. They are intended partially to relieve the traffic burden which would otherwise fall upon University Avenue. The third is the Hopkins-Gilman route, extending from The Alameda to the Eastshore Freeway; with Cedar Street this thoroughfare will facilitate circulation between the North Berkeley Hills residential areas and the western portions of the city.

Secondary Thoroughfares. The secondary streets proposed in the plan are, with few exceptions, intended to serve as subsidiary collectors of traffic to serve the various parts of the city between thoroughfares of a higher order. Therefore, except in three cases, these secondary streets may be merely listed in reference to the plan as follows:

East-West Secondary Streets:

- Alcatraz Avenue, from College Avenue to San Pablo Avenue (partly in Oakland)
- Ashby Avenue, from Domingo Avenue to San Pablo Avenue
- Bancroft Way, from Piedmont Avenue to San Pablo Avenue
- Derby Street, from Warring Street to San Pablo Avenue
- Hearst Avenue, from Gayley Road to Milvia Street
- Rose Street, from Oxford Street to Grove Street

North-South Secondary Streets:
College Avenue, from Bancroft Way to Oakland
Colusa Avenue, from El Cerrito to Solano Avenue
Euclid Avenue, from Grizzly Peak Boulevard to Hearst Avenue
Grizzly Peak Boulevard, along its entire length

The exceptional cases lie in the North Berkeley Hills residential area. The first is the improvement of the La Loma Avenue-Shasta Road route to the rapidly developing residential areas in the southern portions of this hill sector. The other is the proposed Indian Rock Avenue-Santa Barbara Road-Cragmont Avenue connection between this sector of the hill residential areas and Solano Avenue. Both of these proposals are highly essential to the proper movement of traffic to and from the hill areas; they have been classified "secondary" only because of the relatively small numbers of vehicles which will use them.

Grizzly Peak Boulevard, which traverses the ridge of the Berkeley Hills, has traditionally served as the route of one of the most spectacular scenic drives in the entire Bay Area. In recent years, as residential construction has progressed, the view along many portions of the Boulevard has been screened by buildings, fences, and planting. Because the view of Berkeley and the Bay Area as seen from the hills is so greatly valued by Berkeley's citizens, the Interim General Plan proposes that the available sites along the western edge of Grizzly Peak Boulevard should be acquired by the city and developed as viewing places, with adequate off-street stopping areas and with appropriate landscaping.

Parking. As a partial solution to the parallel problem of providing storage space for vehicles using the motorways of the city, the plan proposes that the land immediately adjacent to the inner-circle route surrounding the Central Business District be reserved for the erection of parking structures. In this way the more valuable and more intensively used land comprising the district will be surrounded by parking facilities which will tend to insure that the value of the property and that the vitality of the commercial activity will be protected.

In a similar manner, the plan proposes that each of the intermediate shopping centers and each of the local shopping centers shall be provided with off-street parking facilities in sufficient quantities as to meet anticipated normal parking demands.

The major single traffic generator in the city is the University of California. At the present time on-campus parking facilities are highly inadequate to meet the total demand for parking space, and the overflow extends for many blocks to the north and south of the campus. It is anticipated that parking structures on the perimeter of the campus will be constructed and that a significant portion of the total demand can be accommodated in this way.

The industrial areas, like the University, attract large numbers of vehicles which are parked on the streets for long periods of time, thus limiting the carrying capacities of the streets. Since it is especially important that the paved areas of the streets in the industrial area be available for the movement of the heavy trucks which service the industrial firms, the plan proposes that each firm should provide off-street parking areas sufficient to meet the needs of its own operations.

With the development of increasing residential densities in some areas of the city, the availability of off-street storage space for the automobiles of the residents has been steadily decreasing. In the hill areas where topographical factors greatly limit the flexibility of construction, many houses have been built without provision having been made for the off-street storage of automobiles. In each of these areas the problem is an important one; in the former, traffic volumes tend to be great on the local streets, due to the residential densities; in the latter, the widths of the contoured streets are limited by topographical factors, and parked cars greatly reduce the usable right-of-way. In both cases the Interim General Plan proposes that property owners should be required to provide off-street parking areas sufficient to meet the needs of the residents.

But it is not possible to provide off-street parking facilities in the areas of major traffic generation for all the automobiles which seek storage there. The basic solution to the parking problem will probably be found in the alternative media of transportation offered by public transit.

## 11. PUBLIC TRANSIT

The welfare of Berkeley's citizens, the prosperity of the city's commercial and industrial activity, and the success of the proposed motorways plans are closely dependent upon the development of a convenient and efficient public transit system. Because the San Francisco Metropolitan Region has grown to encompass so vast and so interrelated an area, it has become increasingly critical that the backbone of the region-wide transit system shall be a network of rapid transit routes, capable of serving all areas of the region at high speed. This regional rapid transit system must also serve as the backbone of the Berkeley transit system.

At the present time, the East Bay and Berkeley are served by a transit system which utilizes surface busses and surface electric trains. The very nature of the surface bus required that it compete with other vehicular traffic and that it operate no more rapidly than does the other traffic. One effect of these factors is to discourage the use of the busses in favor of the use of private automobiles. The electric trains which are in use operate for the most part on city streets, and hence they too operate at speeds commensurate with those of private automobiles. Partially as a consequence, the East Bay citizens have one of the lowest transit-riding habits in the country; favoring their own automobiles, the traffic problems on the city streets have become magnified.

The solution to the many problems of circulation which exist in Berkeley today cannot be achieved by recourse to any one type of transportation medium. Rather, an integrated system of motorways, rapid transit, surface transit, and a system of terminal facilities for each is required. It is such an integrated solution which is proposed by the Interim General Plan for Berkeley, but since Berkeley comprises but a small portion of the metropolis, the Interim Plan's proposals must in turn be integrated with those of a regional general plan at such time as that plan is prepared.

Rapid Transit System

The keystone of the mass transport system proposed in the Interim General Plan for Berkeley is a link of a regional rapid transit system which would enter Berkeley via the Grove Street Freeway and pass through the city approximately along the route of the existing "F" train. This rapid transit route would connect Berkeley with Richmond and the other North Bay cities and with Oakland and the other cities along the East Bay. Rapid transit facilities would also connect Berkeley directly with San Francisco and from there with the cities of the Peninsula. Through other regional connections, they would in turn connect Berkeley with the communities in the interior of Contra Costa County and in Marin County.

Modern standards for rapid transit systems specify that the vehicles shall be electrically-powered trains, shall operate on fixed rails along grade-separated rights-of-way, and shall stop at intervals preferably no less than one-half mile apart. The terminals in the main Berkeley link of the rapid transit network are to be located along Adeline Street and Shattuck Avenue in the areas proposed for high-medium density residential use, and at the Central Business District where service can be provided for persons going to and from the commercial quarter, the University, and the Civic Center. Additional terminals are proposed serving the Adeline-Alcatraz shopping center, the Shattuck-Vine shopping center, the Circle, and the Solano Avenue shopping center. The trains will proceed from the Solano terminal to points in Albany, El Cerrito, and Richmond.

Surface Transit System

It is proposed that a system of surface transit vehicles shall supplement the rapid transit system, affording connecting service with the trains, additional short trip service to neighboring communities, and local service to the residential, commercial, industrial, and educational areas of the city. The routings for surface vehicles are not noted in the Interim General Plan; it is intended, however, that they will generally follow the patterns of major and secondary thoroughfares, feeding into the various functional centers of the city and connecting with the rapid transit system at the terminal points indicated above. It is anticipated that the proposed comprehensive transit and motorways systems will greatly facilitate the movement of persons and goods throughout Berkeley and will thereby appreciably enhance the economic and social life of the city.

## 12. RAIL, AIR, AND HARBOR FACILITIES

Rail Lines

The main-line tracks of both the Southern Pacific Company and the Atchison, Topeka, and Santa Fe Railroad pass through Berkeley. The Southern Pacific route terminates at the Oakland Mcle installation, and traverses Berkeley on Third Street in the area which is devoted to industrial use. This trackage was a major factor in the early development of West Berkeley, and it has always been a critical element in the economic life of the city. Supplemented by a system of spur

tracks, economic and efficient access has been accorded many Berkeley firms to their markets throughout the nation and the world.

The initial decision to lay the Southern Pacific tracks along the waterfront was largely dictated by topographical factors. For the development of the city, however, it was a very fortunate one when evaluated in terms of the criteria of urban design principles. Having made possible the development of a flourishing industrial area within the city limits but outside of the major residential areas, it has in turn made possible the development of an internal economic vitality with but little of the accompanying residential blight which is usually associated with industrial activity.

But if the Southern Pacific Company's tracks were fortunately located, the same was not true of the Santa Fe trackage. Bisecting the city in a north-south direction along the line of West and Sacramento Streets, it invades a belt of residential development which extends for the length of the city. Being a supplementary single track line used primarily for passenger trains, the rail traffic using it is small and its attraction to industries has been negligible. Its frontage is presently zoned to disallow industrial use of the land, and only a few factories presently exist along the right-of-way. The franchise of the company expires during the current year; and in anticipation of that date, the company has acquired a new right-of-way, approximately 1,000 feet wide in the tidelands paralleling the present shoreline. The filling operations have not yet been carried out, and as a consequence of a combination of financial and policy factors, it is not likely that removal of the tracks will occur until several years from now.

The Planning Commission has not as yet completed its studies of the waterfront development, but its present thinking is strongly to the effect that industrial development on the tidelands should occur in the area south of the present fishing pier and that the area north of the pier should be reserved for residential and recreational use. The imposition of the relocated Santa Fe trackage in the area suggested for residential development would be as unfortunate as is the present track location. The Interim General Plan therefore tentatively proposes that the Santa Fe and the Southern Pacific tracks be consolidated along that portion of the existing Southern Pacific right-of-way which is north of University Avenue. The Santa Fe tracks would then leave the Southern Pacific right-of-way and enter the tidelands industrial area via an underpass which would be constructed as a part of the University Avenue-Eastshore Freeway traffic interchange.

In order to make this arrangement possible, it is tentatively proposed that the City of Berkeley exchange the land occupied by the Aquatic Park for those tidelands owned by the Santa Fe Railroad which are north of the fishing pier. Adequate surveys and studies have not been conducted to assure that such an exchange would be equitable; and should it be necessary that the city yield a larger acreage than the Aquatic Park, it might then be possible to include tidelands which are located beyond the holdings of the Santa Fe company, in the southern portions of the tidelands. This suggestion hinges in either case upon the

provision of recreational space upon the tidelands at least equal in utility to the Aquatic Park.

Airport Facilities

The need for airport facilities to serve citizens in the East Bay is becoming increasingly pressing. The present international airports which are located in Oakland and in San Francisco will be much more accessible to residents in the northern portion of the East Bay upon the completion of the freeway system. However, studies conducted by the Bay Area Airport Planning Group suggest that additional facilities north of the Oakland Airport will be required in the future. The Interim General Plan recognizes this potential need and recommends that a Class III airport be constructed on filled lands in the Bay north of the Berkeley city line within the municipality of Richmond and possibly extending into Albany.

Harbor Facilities

The development of deep water harbor facilities within the City of Berkeley is not deemed to be prudent, in view of the underwater topography, in view of the fact that the industrial concentration along the East Bay will occur south of the Berkeley line, and in view of the studies and findings of the Oakland City Planning Commission which recommends that a deep water harbor be constructed in those portions of the tidelands which are situated within the cities of Oakland and Emeryville, immediately adjacent to the Berkeley city line.

## 13. TIDELANDS RECLAMATION

The Interim General Plan makes no definite recommendations with respect to the development of the submerged waters of the Bay which are within the city limits of Berkeley. This area comprises approximately 5,000 acres, as compared in extent to the 6,241 acres of land above the high-tide level today. It is not feasible that all of this land shall be reclaimed, since the quantities of fill materials and the costs of the project would be too great to make the filling operation practicable.

The studies which are being conducted by the Planning Commission have not reached the stage where definite decisions can yet be made. The Interim General Plan does indicate in rough sketch form, however, the general thinking of the Planning Commission. It suggests that the filled lands be utilized for a combination of industrial, residential, and recreational activities. The industrial development would occur in the southern portions of the filled area adjacent to the anticipated industrial development in Emeryville and to the projected harbor development there. The northern portions and the waterfront of the southern portion would be developed in residential use. And a series of recreational areas would be developed to serve the citizens of Berkeley and the entire Bay Area. The possibility that filling costs of the recreational areas might be shared with an agency responsible for the erection of a world's fair grounds or that the University of California might fill a portion of the tidelands as the site for its centennial celebration has been suggested.

It must be emphasized that the scheme suggested by the Interim General Plan is very tentative in nature. The Planning Commission is eager to discuss the entire question of the tidelands reclamation with all interested persons. The tidelands are Berkeley's major unexploited resource. The potentialities for the development of industrial, residential, and recreational facilities are tremendous. The decisions and the designs must be developed slowly and with great care, for only in this way can the great potentialities be fully realized. The formulation of these decisions and the preparation of the designs is the assigned responsibility of the Planning Commission, and the Commission regards it as one of its major responsibilities. Its program of study will continue. With the completion of the Interim General Plan, which can now be used as a more tenable basis for the integration of tidelands development with development of existing lands, the process of study will be greatly facilitated. The revised proposals for tidelands reclamation will be circulated for public discussion as soon as they can be more thoroughly refined.

## 14. SUMMARY OF THE PLAN

The Interim General Plan for Berkeley has been prepared to serve as the general guide for the physical development of the city during the next few years and until the General Plan for Berkeley is prepared. Being a preliminary version of the more thorough General Plan, it too looks into the future by about twenty to thirty years.

It makes recommendations for the location and the general sizes of residential areas of varying population densities, and it states that Berkeley shall avoid the problems of congestion and decay by limiting its population to approximately 150,000 persons. To serve that anticipated population it proposes that shopping centers of three different sizes shall be located in key places throughout the city, that recreational areas of varying kinds be developed throughout the residential areas, and that schools be so located as best to serve the children who will live in Berkeley in the future. A large, integrated industrial area which may someday be expanded onto the tidelands will be developed in the western portions of the city in conjunction with the main-line railroads, freeways, and deep water harbor facilities.

In order to facilitate movement within the city and between Berkeley and other parts of the Bay Area, a system of major and minor streets will be developed, supplemented by a comprehensive parking system, a system of freeways, a network of surface transit routes, and a main-line rapid transit route connecting Berkeley with the other centers of the region. In the hill areas and in portions of the level areas of the city, landscaped pedestrian pathways will be developed to facilitate movement throughout the residential areas and to increase the safety of children going to and from the schools and playgrounds.

The plan proposes that all land-using facilities and that all circulation media shall be integrated into a working unified whole, in order that the land which is available for development shall be

used as economically as is possible and in order that the economic and cultural life of the community shall be enhanced.

In order to assure that each new structure which is erected in the city shall fit into the overall plan for the city in its proper place, the Interim General Plan will be supplemented by a program for its effectuation.

As the means of guiding the development of public works, a program of capital-improvements review will be established, whereby the long-range construction programs of the operating departments of the city will be reviewed by the Planning Commission which will assess the conformance of the programs to the general plan. In addition the immediate construction plans of the operating departments will also be referred to the Planning Commission. Through this process of Commission review the city government will assure that all public works which are constructed will eventually fit into a thoroughly integrated physical pattern.

As the means of guiding the development of private construction, the Interim General Plan will be studied as the basis for the revisions of the Zoning Ordinance and the formulation of a Subdivision Ordinance. By this interpretation of the plan's proposals into law, it will be possible over the years to guide the investment of private builders so as to assure that construction activity conducted by them conforms to the general outlines of the plan and so as to assure that later construction by private builders is not of such variety as to depreciate the values of previously erected structures. It is the express desire of the Commission that this process shall not be coercive in nature; rather it is hoped that the mutual welfare of all participants may be furthered by the voluntary cooperation of the city government and the private investor. The Commission's professional staff is always available to assist private builders in the preparation of construction designs and plans and to assist potential investors in the selection of appropriate sites. It has been the Commission's experience that desirable solutions to the most difficult problems can be achieved through collaborative study of those problems.

In all of these activities the Planning Commission will continue to serve as an advisory body only. Final decisions in all matters will be made by the elected members of the City Council in accordance with established principles of democratic government.

The net effect of this continuing process will be to protect the desirable functional and aesthetic qualities of Berkeley which exist today and to guide the future development of the city toward an ever-improving organization of the physical elements.

# 15. THE PLAN DRAWING

**AN INTERIM GENERAL PLAN FOR BERKELEY, CALIFORNIA, is composed of both the graphic portion of the plan, which is presented in this drawing, and the textual portion of the plan, which is presented as Part II of this report.**

U.C. BERKELEY LIBRARIES
C101743475